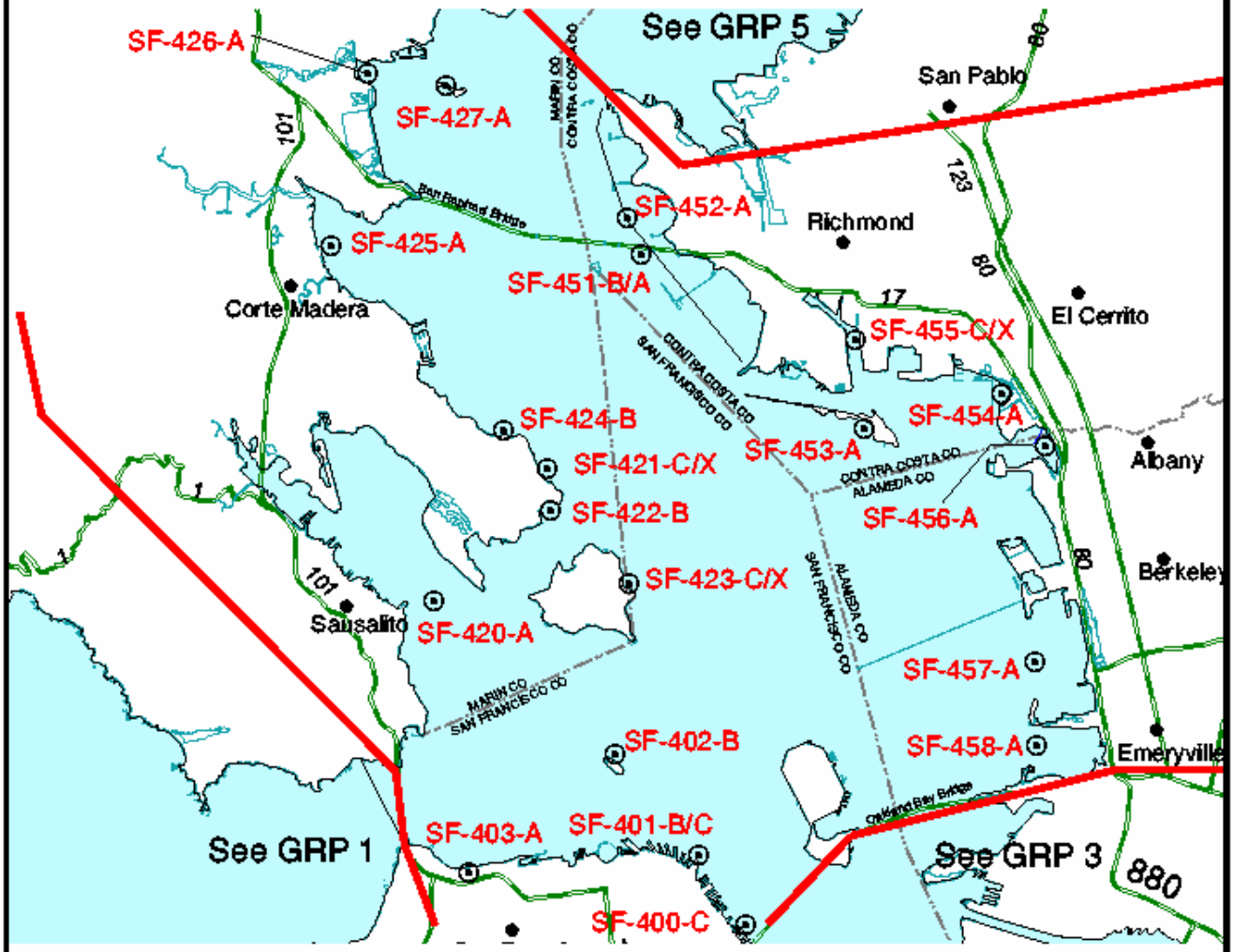
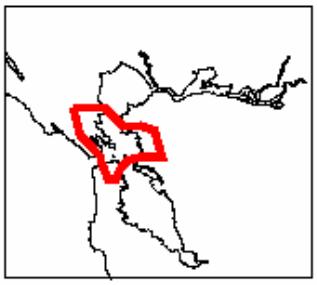
SF Geographic Response Area 4
Central SF Bay
Environmentally Sensitive Sites





Note: Marker symbols (⊙) are only site reference and do not indicate full extent of sites.

GRA/GRP 4 Table of Contents

GRA/GRP 4 Site Index/Response Actions

Site ID	Priority	Site Name	Assignment	Date/Time Required	Date/Time Completed
SF- 400		San Francisco Waterfront			
SF- 401		Pier 39			
SF- 402		Alcatraz Island			
SF- 403		Crissy Field Wetland (Tentative Site)			
SF- 420		Richardson Bay Marshes			
SF- 421		Tiburon Peninsula			
SF- 422		Kiel Cove			
SF- 423		Angel Island			
SF- 424		Paradise Cove			
SF- 425		Corte Madera Marshes			
SF- 426		San Rafael Creek Marsh			
SF- 427		Marin Islands			
SF- 451		Castro Rocks			
SF- 452		Richmond Eelgrass Beds			
SF- 453		Brooks Island			
SF- 454		Richmond Inner Harbor/Hoffman Marsh			
SF- 455		Santa Fe Channel			
SF- 456		Albany Marsh			
SF- 457		Berkeley Eelgrass Beds			
SF- 458		Emeryville Lagoon			

ACP Sensitive Site Resource List – GRP (GRA) 4

Site Site Name

strategy PREVENTION OBJECTIVE OR CONDITION FOR DEPLOYMENT

Harbor Boom	Swamp boom	Other boom/TYPE	Sorbant boom	Anchoring No	Anchoring type of gear	Boom boat	Skiff	Skimmer No	Skimmer Type	Special Equipment No	Special Equipment and kinds	(and notes)	deploy staff	Staff to tend
2-400 San Francisco Waterfront														
. 1 -	**Collection at shoreline: recover oil at seawalls where there is shoreline access. Deflect oil to areas**													
6000			500	60	60	2	2	1	SSS				10	
. 2 -	***Economic Exclusion Pier 72***													
1600				4	4	2	1						8	
2-401 Pier 39														
. 1 -	Primary:**Exclude oil from entering breakwater - to protect sea lions. Beware of high boat traffic activity here.**													
1600			700		tie boom off to pilings / breakwall	1		2	SSS	1		boom tending for traffic; manueverable boom boats	3	2
. 2 -	**Sorbent Protection - complete the sorbent barrier in the interior of the marina breakwater to intercept seepage**													
0	0		1100	5	small anchors	0	1	0				1400 ft sorbent or swamp boom+5 anchors on standby	2	
2-402 Alcatraz Island														
. 1 -	**Protection booming in unusual conditions: When wave reflection will not likely keep oil off shoreline, protect the**													
800				7	40# danforths w/ 1/2" chain	1		0					3	
. 2 -	**Deflection booming in unusual conditions: When wave reflection will not likely keep oil off shoreline, deflect oil**													
2100	0	0	0	15	40# danforths w/ 1/2" chain	2	0	0		0			6	
2-403 Crissy Field Tidal Marsh														
. 1 -	Primary: **Exclude oil from entering the mouth**													
400				4	4/22+/danforth w chain	1	0						3	
. 2 -	**Exclude / collect: capture of oil which escapes past primary protection**													
	400		300	3	3/22+/danforth & Stakes & line	0	0						2	
2-420 Richardson Bay Marshes														
. 1 -	Primary: **Exclude oil from entering Richardson Bay by booming the mouth.**													
6000			500	14	14/22+/danforths + chain	6	1	0				Bboats capable of shallows & obstructions	17	
. 2 -	**2ndary: exclude/collect oil which has entered Richardson Bay**													
2500	600		600	12	12/22+/danforths + chain	4	1	2	SSS			Bboat: shallow draft/; recommende 2 SSS	14	
2-421 Tiburon Peninsula														
. 1 -	**Collection: The eddies off shore and the beaches are natural collection areas. Set booms to beach oil or retain**													
0	0	0	0	0	0	0	0					landing craft	10	
. 2 -	**collection site: deflect oil to natural collection site**													
1200	0		0	0		1	0	0					3	
2-422 Keil Cove														
. 1 -	Primary: **Exclusion booming for eelgrass and coarse sand beach.**													
0	2400			14	14 / 20# w/ 10' 1/2" chain	4						1,200 feet of 1/2" anchor rope	8	
2-423 Angel Island														
. 1 -	**Collection: natural collection at Blunt Pt & Quarry Pt.**													
2600	1200	0	0	20	20 20# w/ 20' 1"chain	2	1					1000' 1/2" anchor line	10	
2-424 Paradise Cove														
. 1 -	**deflect oil away from shoreline into the main channel on flood tide**													
2000				8	22# danforths w. 1/2" chain	2							6	2
. 2 -	**Deflect / Collect oil in nearshore eddies**													
2000	0		0	8	22# danforths w. 1/2" chain	2	0	0					6	2
. 3 -	**Shoreline Protection of Paradise Cove**													
4500	0		0	6	22# danforths w. 1/2" chain	3	1	0					9	
2-425 Corta Madera Marshes														
. 1 -	Primary: **Exclude oil from entering tidal inlets and cove mouth and creek.**													
8200	600		600	16	16/22+/danforths & chain + stakes	6	1	0				Bboats very shallows & obstructions impervious	20	
2-426 San Rafael Creek Marsh														
. 1 -	**Deflect oil away by deflection boom off of Pt. San Pedro and Pt. San Quentin.**													
3000				7	7/ 22+/ danforths, & 15' 1/2 chain.	3	2					Shallow draft boom boats.	11	
. 2 -	Primary: **Exclusion from San Rafael Creek and local harbors**													
1000				8	8/22+/danforths & stakes	1	1					Very Shallow draft boom boats.	5	
. 3 -	**Shoreline protection when marshy margins are threatened by severe oiling - north and south of creek mouth.**													
6900		600 TBB		8	8/22+/danforths & stakes	3	2					Very Shallow draft boom boats.	12	
2-427 Marin Islands														
. 1 -	Primary: **Deflect oil past islands with chevron at east end.**													
3000				7	7/22+/danforths + chain.	3	0						9	
. 2 -	**protective enclosure booming of both islands in the event of heavy oil threat.**													
4000				7	7/22+/danforths + chain	4	0						12	

ACP Sensitive Site Resource List - GRP (GRA) 4 (continued)

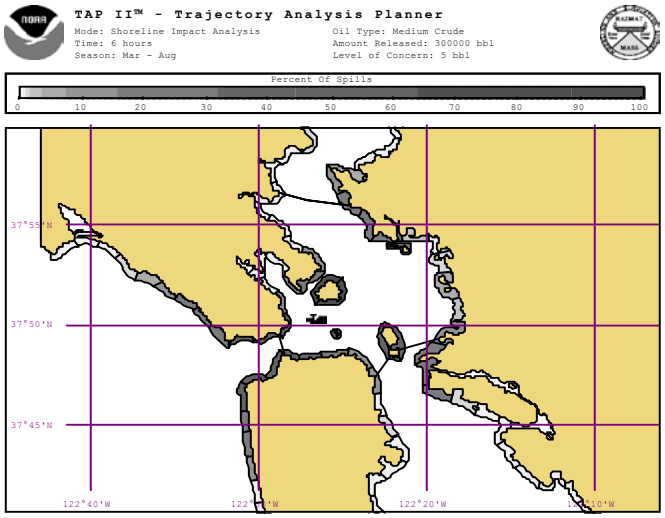
Site Site Name

sub-strategy PREVENTION OBJECTIVE OR CONDITION FOR DEPLOYMENT

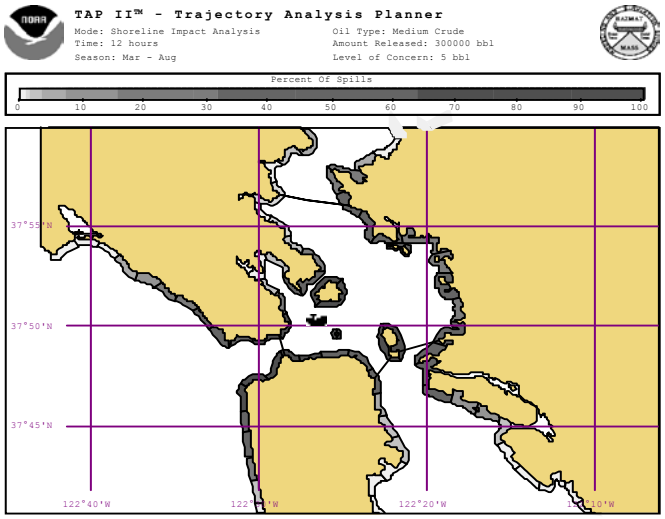
Harbor Boom	Swamp boom	Other boom/TYPE	Sorbant boom	Anchoring No	Anchoring type of gear	Boom boat	Skiff	Skimmer No	Skimmer Type	Special Equipment No	Special Equipment and kinds	(and notes)	deploy staff	Staff to tend
2-451 Castro Rocks														
. 1 - Primary: **Deflection of oil threat from west or south west - deploy protection legs 1 and 2**														
3000	2500		300	13	5/40+/northhill, & 7/22+/Danforth	3	0					maneuverable Bboats & 1500' line	11	
. 2 - Secondary: **Deflection/protection for south and east side oil threats - deploy protection legs 1 and 3 first, then 2 and 4 before**														
7000	2500		300	18	5/40+/northhill, & 13/22+/Danforth	3	1					maneuverable Bboats & 1500' line	11	2
. 3 - Alternate primary: **Deflection for north side oil threats deploy - protection legs 2 and 4**														
3000	2500			15	5/40+/northhill, & 10/22+/Danforth	3	1					maneuverable Bboats & 1500' line	11	2
. 4 - Confine/deflect oil to shore for collection after completion of protection strategy														
2300				6	22#+ daforth with heavy chain	3	1						11	
2-452 Richmond Eelgrass Beds														
. 1 - Primary: **Exclude oil from pocket marsh at Castro Pt.**														
0	400				stakes or anchors	0	1						2	
. 2 - Additional Primary **Protect eelgrass bed in cove between Molate Pt and Pt Orient.**														
2100				6	22# = chain	2	1						6	
. 3 - Collection/confinement for large losses of oil at or near this site														
5000				50	50 20# w/ 10' 1" chain	8	4					2,500' 1/2" anchor line	20	
2-453 Brook's Island														
. 1 - Primary: **Protection Booming when oil threatens high marsh**														
2000	0	0	0	0		1	1	0	0			boom boat capable of withstanding grounding	3	
. 2 - Minimize the length of shoreline oiled by on-water recovery and using boom to direct oil to the most														
4000			200	16	16 20# w/10'chain & 30' line	3	1						10	
2-454 Richmond Inner Harbor/Hoffman														
. 1 - Primary: **Exclude oil from marsh entry channels**														
2500	1100		200	8	6-8 25# danforth, 15' 1/2 chain	2	2	1				Shallow draft boom boat.	8	
. 2 - protection for splash-over or porous breakwater														
0	0	0	0	0		0	0	0	0					
. 3 - Protection booming														
5000	0	0	0	11	22# danforth, 15' 1/2 chain	3	1	0	0			very shallow water boom boats	12	
2-455 Santa Fe Channel														
. 1 - Primary: **Contain/collect oil within Channel and prevent oil from leaving the channel and threatening sensitive sites**														
6200			500	10	10	5							10	
2-456 Albany Marsh														
. 1 - Primary: **Exclude oil from embayment on west or southwesterly winds.**														
1500	1500		100	8	8/22+/danforth + chain	2	1	1	shallow &				8	
. 2 - Alternate primary **Exclude oil from embayment on northwesterly winds by directing oil to collection.**														
2300	2300			10	10/22+/danforths	3	2	1	SSS			very shallow Bboats , skimmers & stakes.	12	
. 3 - Backup exclusion strategy if oil gets past exclusion deployment.														
2300	2300		2300	10	10/22+/danforths	3	2					very shallow draft vessels	12	
2-457 Berkeley Eelgrass Beds														
. 1 - Primary: **Assess need for protective booming: Eelgrass is only vulnerable at very low tides when eelgrass tops are**														
0	0	0	0	0		0	0	0	0			none	1	
. 2 - Protective / deflective booming when oil coming from the west														
5000			2000	14	20 /20# w/ 10' 1" chain	10	2						20	
2-458 Emeryville Lagoon/Mudflats														
. 1 - Primary: **Exclude/Deflect oil past the site and exclude it from entering lagoon by winds, waves and very light tidal current**														
4500			2000	28	28/22+/danforth + 15' chain	3	3	1	SSS			Bboat: 1 very shallow draft	15	
. 2 - Exclusion backup if oil will over-top the boom														
3600				7	7/22+/danforths + chain	3	2					Bboat: very shallow draft at south side	11	

PROBABILITY OF OIL REACHING EACH SITE STRATEGY IN GRP 4

GRP 4



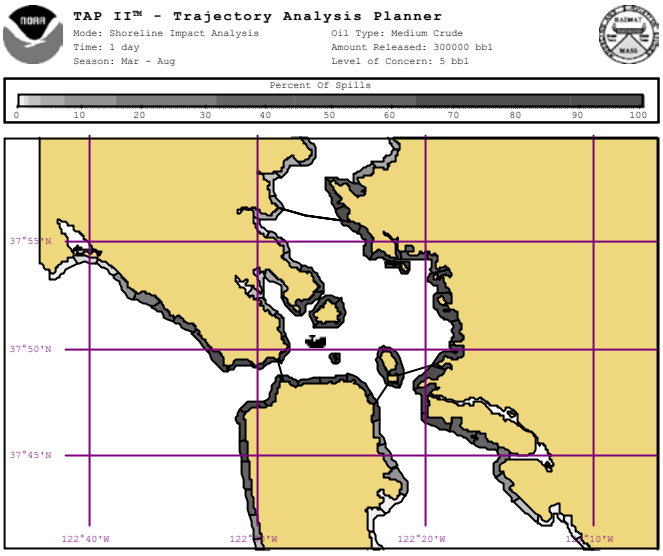
6 hours from start of spill



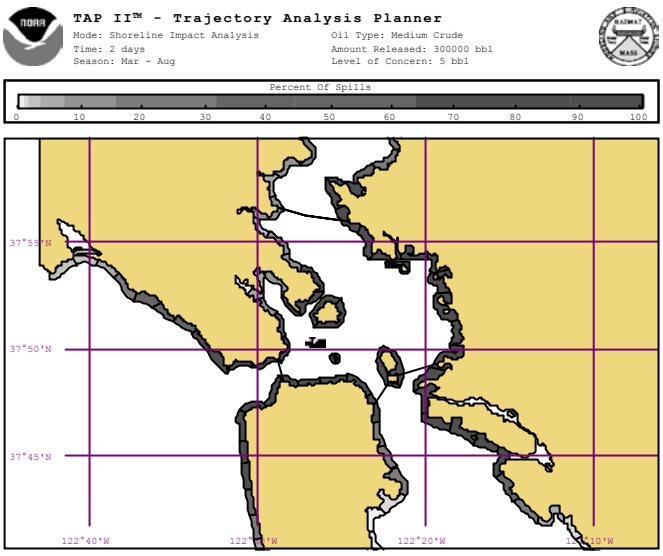
12 hours from start of spill

TAP II Maps for GRP4 Scenario: Spill of 300,000 bbls of crude at Harding Rock in the Spring. The shades of grey at each impacted site correspond to a percentage in the legend of the number of spill scenarios (from 500 runs of various wind, tides and currents) that brought more than 5 bbls (= Level Of Concern) of oil to that site in the specified time frame (6 hours or 12 hours).

GRP 4



24 hours from start of spill



48 hours from start of spill

TAP II Maps for GRP4 Scenario: Spill of 300,000 bbls of crude at Harding Rock in the Spring. The shades of grey at each impacted site correspond to a percentage in the legend of the number of spill scenarios (from 500 runs of various wind, tides and currents) that brought more than 5 bbls (= Level Of Concern) of oil to that site in the specified time frame (24 hours or 48 hours).

Table of Percent of Spills that bring oil (> 5bbls) to each site from the GRP4 scenario.

ACP SITE#	ES	SITE NAME	LAT N (Deg. Min.)	LONG W (Deg. Min.)	6 HOURS (% prob)	12 HOURS (% prob)	24 HOURS (% prob)
2-423	C	Angel Island	37 54	122 27	79	98	100
2-151	C	Pt. Diablo to Lime Pt.	37 49	122 30	64	81	95
2-422	B	Keil Cove	37 55	122 27	54	55	80
2-351	A	Yerba Buena Island	37 48	122 22	53	88	97
2-402	B	Alcatraz Island	37 50	122 25	50	87	96
2-153	A	Land's End	37 47	122 30	46	69	94
2-154	A	Cliff House and Seal Rocks	37 47	122 31	46	69	94
2-150	C	Point Bonita and Bonita Cove	37 49	122 31	37	59	74
2-148	A	Rodeo Lagoon	37 50	122 32	34	53	70
2-149	A	Bird Island	37 49	122 32	34	53	70
2-421	C	Tiburon Peninsula	37 54	122 27	12	31	55
2-424	B	Paradise Cove	37 54	122 27	12	31	55
2-420	A	Richardson Bay Marshes	36 56	122 30	15	46	73
2-155	A	Ocean Beach/Fort Funston	37 45	122 30	29	44	68
2-452	A	Richmond Eelgrass Beds	37 58	122 24	26	44	81
2-455	C	Santa Fe Channel	37 55	122 22	25	42	79
2-451	A	Castro Rocks	37 50	122 24	25	36	78
2-452	A	Richmond Eelgrass Beds	37 58	122 24	25	36	78
2-453	A	Brook's Island	37 54	122 21.5	23	44	86
2-147	A	Redwood Creek/Big Lagoon/Muir Beach	37 52	122 35	21	37	59
2-452	A	Richmond Eelgrass Beds	37 58	122 24	21	25	64
2-146	A	Bolinas Lagoon	37 55	122 40	20	31	51
2-401	B	Pier 39	37 48	122 22	15	54	81
2-420	A	Richardson Bay Marshes	36 56	122 30	15		
2-145	B	Duxbury Reef	37 53	122 40	14	22	38
2-501	A	Castro Creek and Marshes	37 58	122 24	14	16	44
2-458	A	Emeryville Lagoon/Mudflats	37 50	122 29	12	38	82
2-400	C	San Francisco Waterfront	37 46	122 23	8.6	36	71
2-506	A	San Pablo Bay Eelgrass Bed	37 59	122 25	6.8	16	44
2-457	A	Berkeley Eelgrass Beds	37 51	122 19	4.8	33	72
2-454	A	Richmond Inner Harbor/Hoffman Marsh	37 54.5	122 20	3.4	27	60
2-427	A	Marin Islands	37 58	122 28	3	3.8	10

2-420	A	Richardson Bay Marshes	36 56	122 30	2.8		
2-457	A	Berkeley Eelgrass Beds	37 51	122 19	2.6	29	74
2-456	A	Albany Marsh	37 54	122 19	1.6	30	70
2-142	B	Point Resistance	38 00	122 50	1.6	4.4	8.8
2-143	B	Miller Point	37 59	122 49	1.6	4.4	8.8
2-144	A	Double Point and Stormy Stack	37 57	122 47	1.6	4.4	8.8
2-551	A	McNear's Beach Marshes	38 00	122 27	1.6	3.8	10
2-552	A	China Camp Marsh	38 00	122 28	1.6	3.8	10
2-420	A	Richardson Bay Marshes	36 56	122 30	0.8		
2-454	A	Richmond Inner Harbor/Hoffman Marsh	37 54.5	122 20	0.4	23	56
2-420	A	Richardson Bay Marshes	36 56	122 30	0.4		
2-302	C	Alameda Eelgrass Beds	37 45	122 16	0.2	7.8	38
2-425	A	Corte Madera Marshes	38 56	122 30	0.2	1.4	5.2
2-426	A	San Rafael Creek Marsh	37 58	122 29	0.2	0.4	2.4
2-425	A	Corte Madera Marshes	38 56	122 30	0.1		
2-502	A	San Pablo Creek Marshes	37 58.5	122 23		3.8	13
2-506	A	San Pablo Bay Eelgrass Bed	37 59	122 25		3.8	13
2-303	A	San Leandro Bay	37 45	122 13		3.6	26
2-354	B/A	Islais Creek - Pier 94 Saltmarsh	37 44.3	122 22.5		3	10
2-353	B/A	Herron's Head Park - India Basin	37 44.3	122 22.5		3	9.4
2-304	C	Bay Farm Island Eelgrass Beds	37 44	122 15.5		0.2	11
2-503	A	Pinole Pt. Marshes-South	37 59	122 21.6		0.2	7.4
2-504	A	Pinole Pt. Marshes – North	38 05	122 21			6.4
2-156	A	Thornton Beach State Park	37 42	122 30			2
2-140	A	Drakes Estero	38 02	122 56			1
2-141	A	Limnatour Spit	38 02	122 55			1
2-138	A	Point Reyes Headlands	38 00	123 00			0.8
2-139	A	Drakes Beach (West)	38 07	122 57			0.8
2-352	B	South Basin, Hunters Point	37 43	122 23			0.6
2-505	A	Pinole Creek and Wetlands	38 01	122 18			0.6
2-552	A	China Camp Marsh	38 00	122 28			0.6
2-305	A	San Lorenzo Creek to Johnson Landing	37 29	122 02			0.2

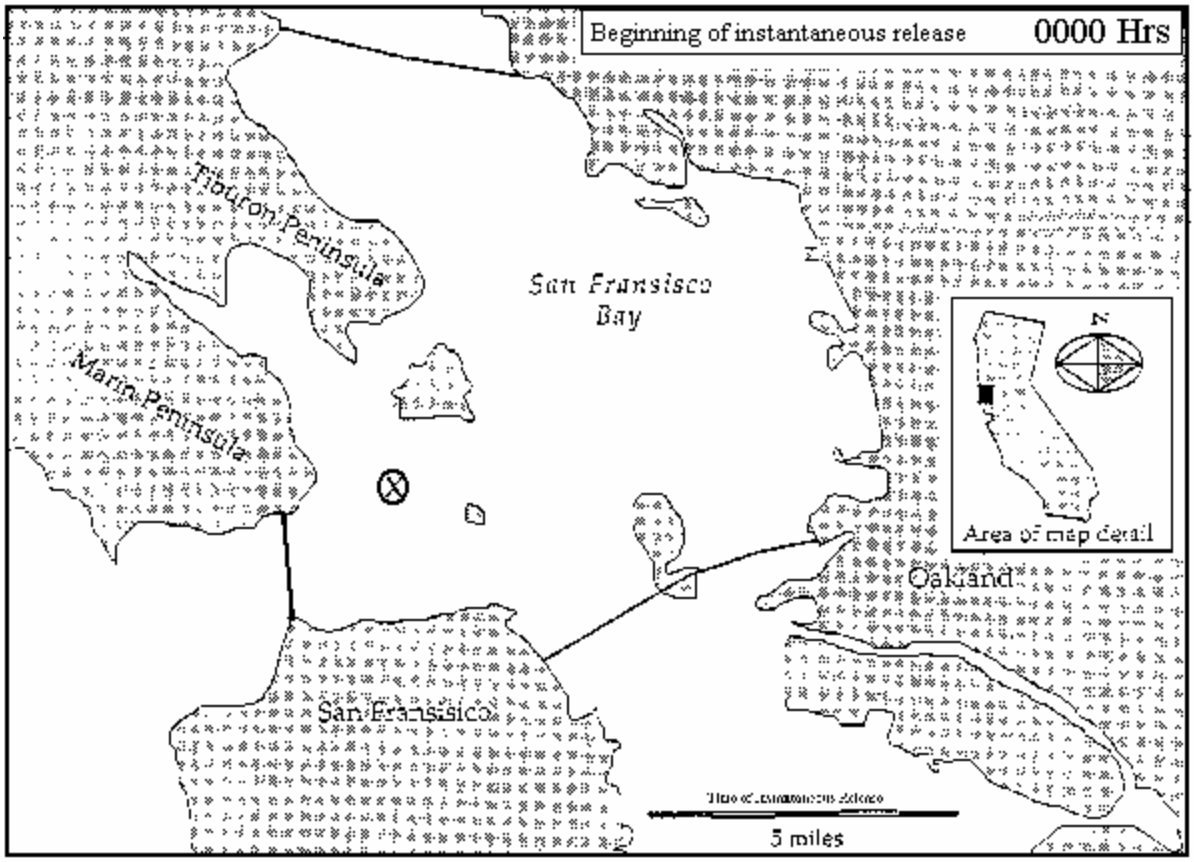
RESPONSE PRIORITIES FOR HARDING ROCK SCENARIO - GRA 4

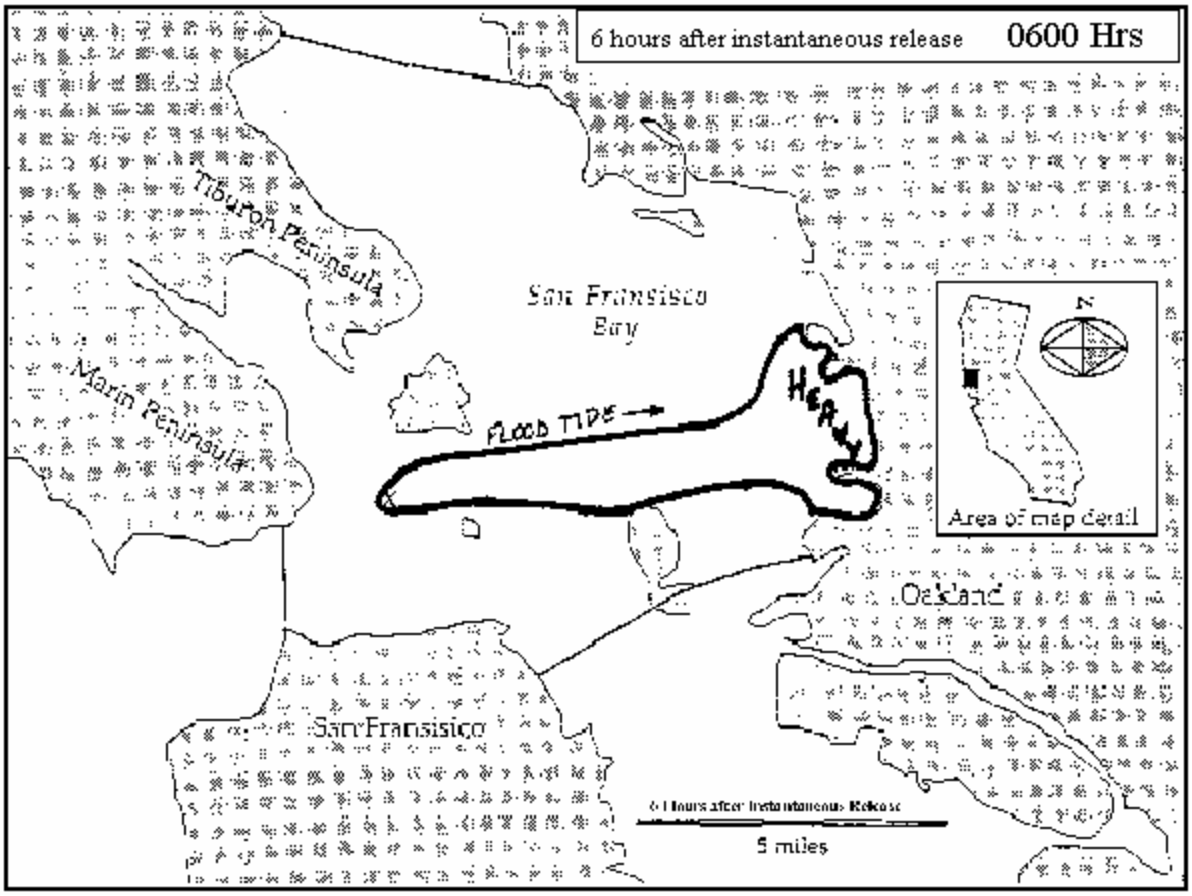
TIDE AND WIND AT TIME	TIME OILED (hrs)	PRIORITY	SITE ID	SITE DESCRIPTION
FEBRUARY SCENARIO	0	1		Spill Site Containment
300,000 bbl ANS Crude	0	2		On-Water Recovery
Slack < flood @ 0600	0-3	3	402	Alcatraz Island
Historical wind data	3-6	4	420	Richardson Bay Marshes
Runoff unknown	3-6	5	458	Emeryville Lagoon and Mudflats
	3-6	6	457	Berkeley Eelgrass Beds
	3-6	7	424	Paradise Cove
	3-6	8	451	Castro Rocks
	3-6	9	351	Yerba Buena Island
	3-6	10	452	Richmond Eelgrass Beds
	6-12	11	454	Richmond Inner Harbor & Hoffman Marsh
	6-12	12	401	Pier 39
	12-24	13	453	Brook's Island
	12-24	14	456	Albany Marsh
	12-24	15	425	Corte Madera Marsh
	12-24	16	426	San Rafael Creek Marsh
	12-24	17	427	Marin Islands
	12-24	18	352	South Basin, Hunters Pt.
	12-24	19	154	Land's End
	12-24	20	151	Pt. Diablo - Lime Pt
	12-24	21	301	Alameda Eelgrass Beds
	24-48	22	150	Pt. Bonita & Bonita Cove
	24-48	23	153	Cliff House and Seal Rocks
	24-48	24	155	Ocean Beach/Fort Funston
	48-72	25	352	San Leandro Bay
AUGUST SCENARIO	0	1		Spill Site Containment
300,000 bbl ANS Crude	0	2		On-Water Recovery
Slack < flood @ 0600	6-12	3	402	Alcatraz Island
Historical wind data	12-24	4	151	Pt. Diablo - Lime Pt
Runoff unknown	24-48	5	351	Yerba Buena Island
	24-48	6	424	Paradise Cove
	48-72	7	425	Corte Madera Marsh
	48-72	8	420	Richardson Bay Marshes
	48-72	9	453	Brooks Island
	48-72	10	451	Richmond Eelgrass Beds
	48-72	11	458	Emeryville Lagoon and Mudflats
	48-72	12	457	Berkeley Eelgrass Beds

Harding Rock Spill Scenario Map

12,000 Barrels of Alaska North Slope Crude

Use Only as a General Reference.
Oil may move beyond map boundaries.
Prepared by NOAA

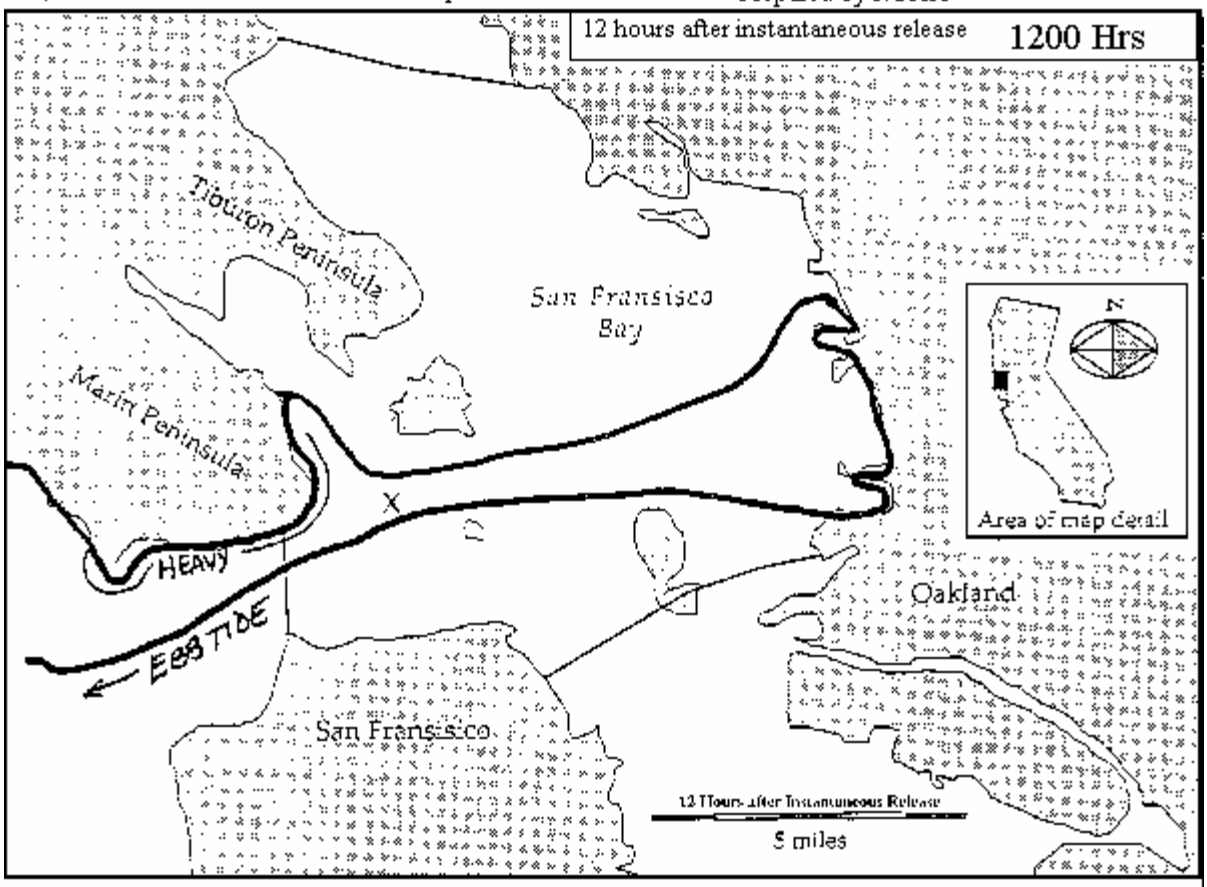


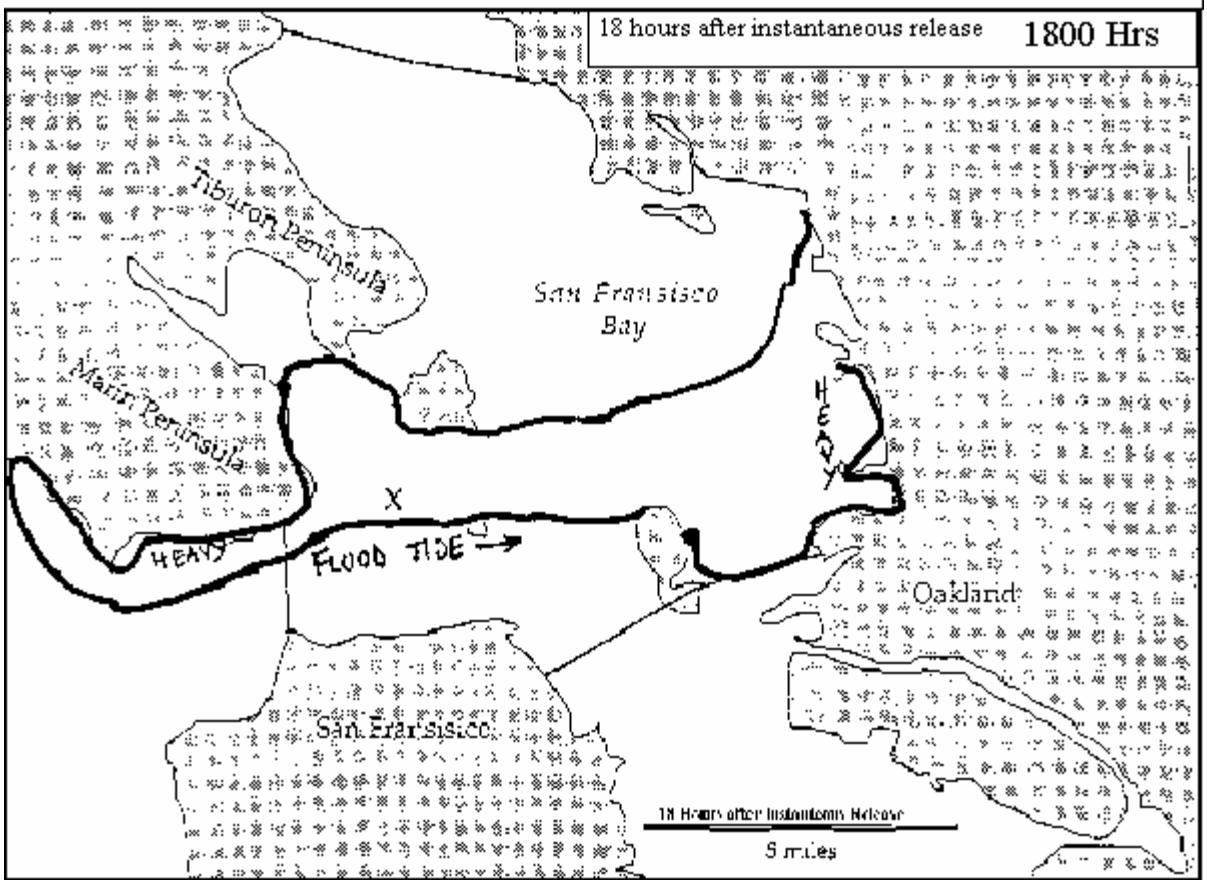


Harding Rock Spill Scenario Map

12,000 Barrels of Alaska North Slope Crude

Use Only as a General Reference.
Oil may move beyond map boundaries.
Prepared by NOAA

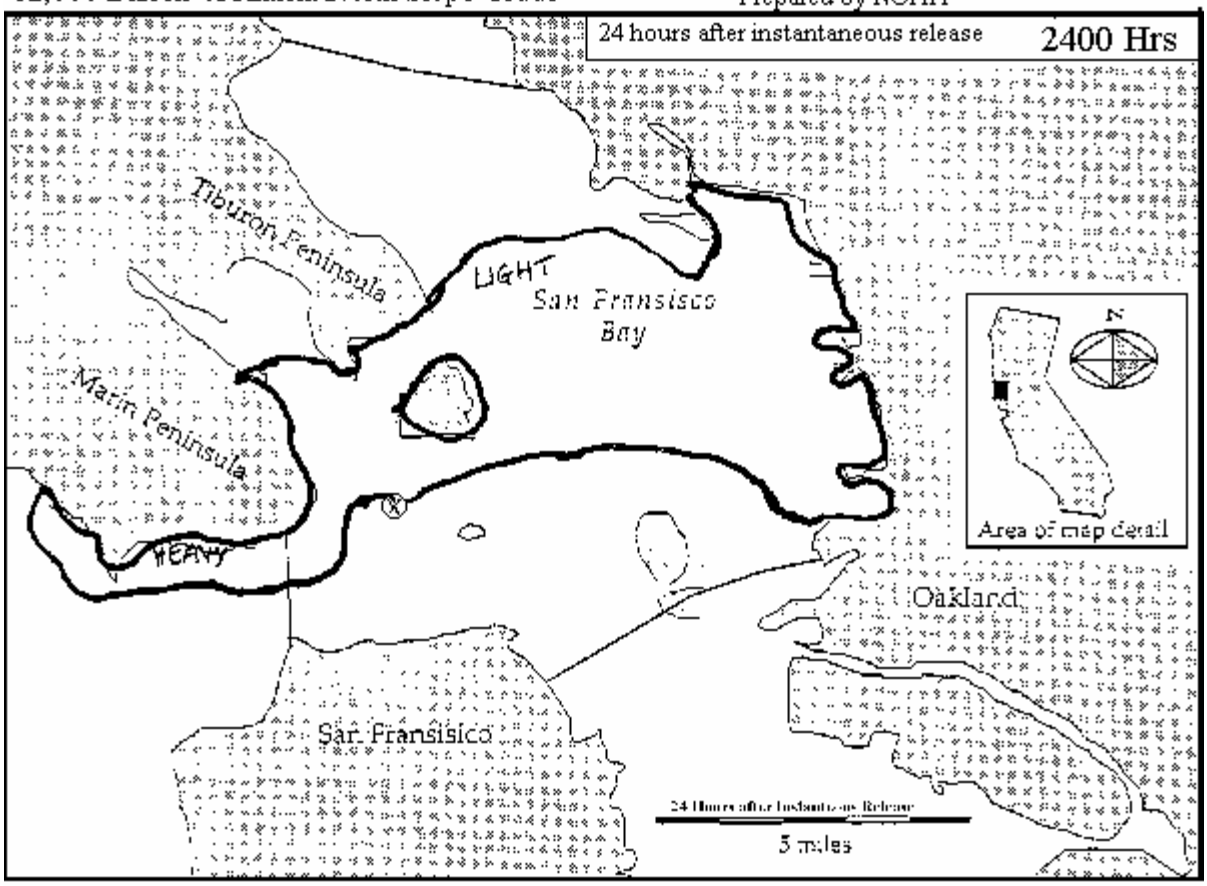


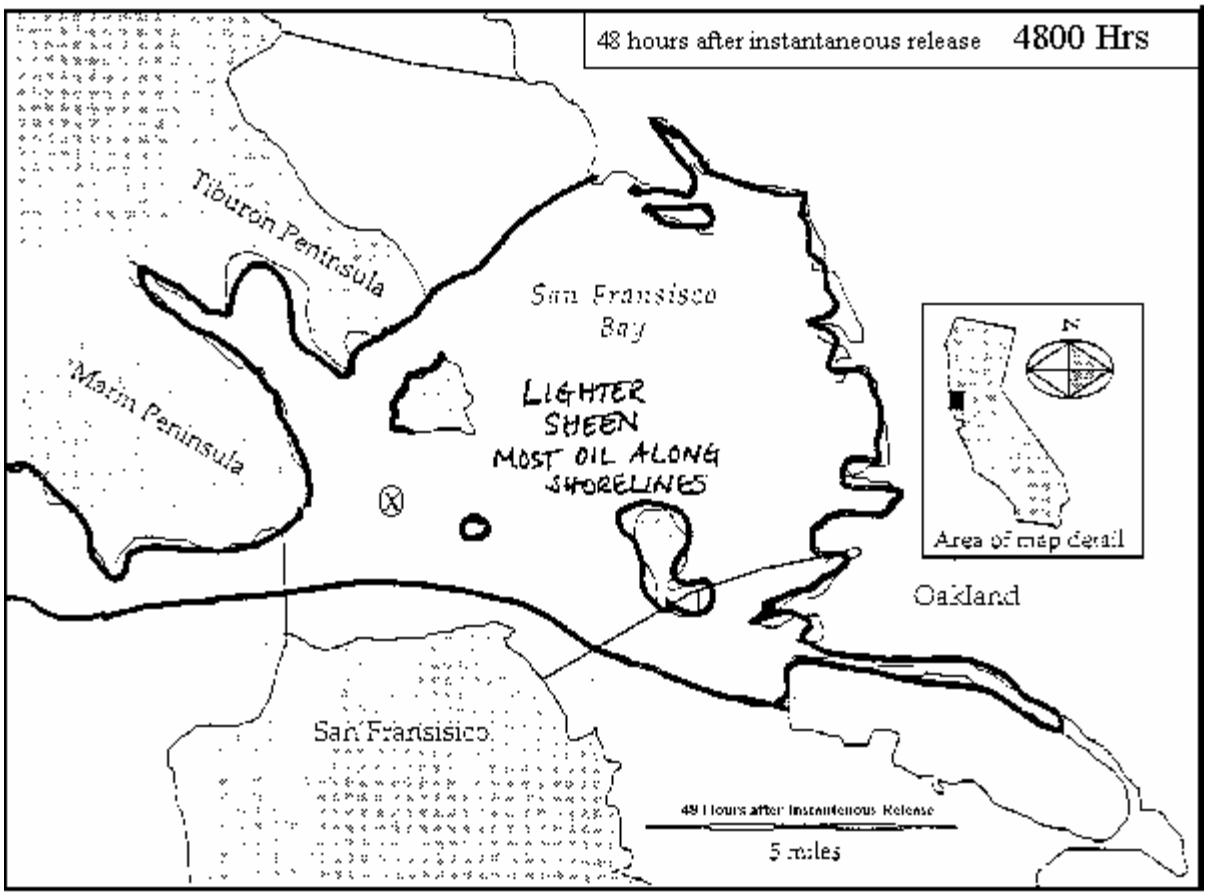


Harding Rock Spill Scenario Map

12,000 Barrels of Alaska North Slope Crude

Use Only as a General Reference.
Oil may move beyond map boundaries.
Prepared by NOAA

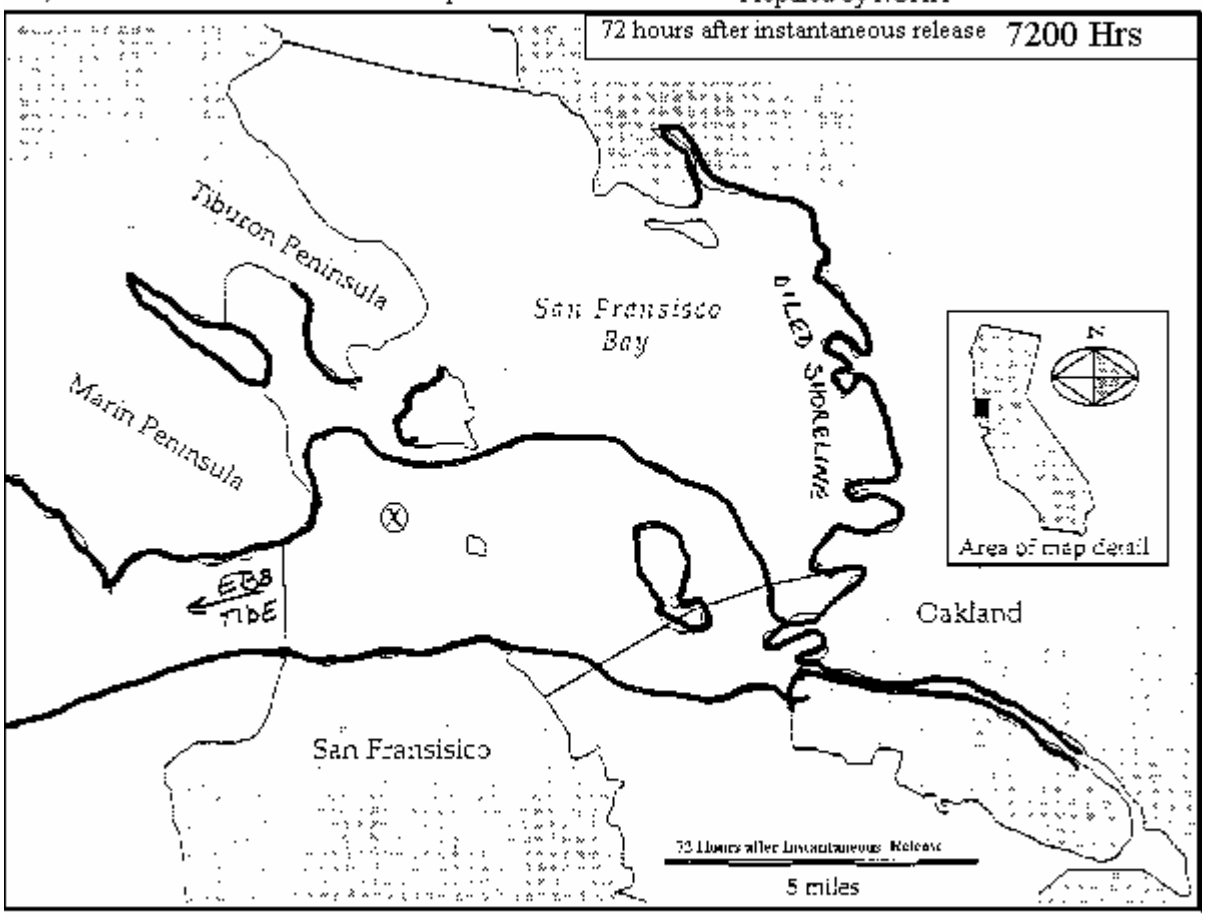




Harding Rock Spill Scenario Map

12,000 Barrels of Alaska North Slope Crude

Use Only as a General Reference.
Oil may move beyond map boundaries.
Prepared by NOAA



This Page is Intentionally Blank

2-400-X San Francisco Waterfront Collection/Protection -Site Summary 2-400–X

County: San Francisco **Latitude** 37 46 N **Longitude** 122 23 W
USGS: San Francisco North **OSPR Map:** 055 **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
This site is the shoreline of San Francisco from Fort Mason to the Bay Bridge. This shoreline consists of man made structures including piers, Seawalls, and rip rap. The bottom sediments here are mostly soft sediments. Currents can be strong, approaching 6 knots.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
Herring spawn during the winter. There are cooling water intakes at power plants near Potrero Pt. (pier 72) and India Basin (pier 98).

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
Aquatic vegetation and invertebrates growing on pilings, seawalls and riprap may be injured by oil and cleanup activities. Herring spawn on these surfaces during the winter months.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
Sea birds are present throughout the year.
Herring spawn here in the winter. Fish are present throughout the year.
Algae and invertebrates live on all hard surfaces

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
	Baylands Nature Preserve		(650) 329-2506	
B	Peter Baye	U S Army Corps of Engineers	(415) 744-3322	
O	City of San Francisco		(415) 556-8371	
B	Diane Watters	Calif Dept of Fish and Game	(650) 688-6357	

2-400-X San Francisco Waterfront Collection/Protection - Site Strategy 2-400-X

County: San Francisco **NOAA CHART:** Entrance to San Francisco Bay18649 Latitude 37 46 N Longitude 122 23 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
The shoreline of San Francisco from Fort Mason to the Bay Bridge.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
There are sunken obstructions to navigation in many areas, sunken vessels and old pier pilings.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
This collection strategy should be used to take advantage of the slow water between piers and the boats at anchor to divert oil out of swifter along shore currents to shoreline where collection is possible.

SITE STRATEGIES

Strategy 2-400.1

(USCG Strategic Objective: **67**) **Dates:** SISRS Approved 02/06/1999 last tested 01/01/2000 ACP date

Objective or Prevention Condition

Deflect to Collection at shoreline: recover oil at seawalls where there is shoreline access. Deflect oil to areas where current is slowest to minimize the distance the oil travels, especially on the ebb tide.

Technique Details Check here means (X) **" No strategy diagram"**

Deflect oil to the shoreline and setup shore side skimmers (SSS). Alongshore eddies and pier pilings slow currents making opportunities to collect oil when the currents beyond the piers may exceed 4 knots. Deploy short pieces of small boom between piers and other manmade structures down current from the spill source. The boom should be placed at an angle to the current to prevent entrainment, and should be tightened sufficiently to prevent the current from bending the boom such that some portion of it is perpendicular to the current. Where oil entrains under a boom another length of boom must be placed down current of the first to catch the entrained oil and deflect it to slower moving water. Some potential collection sites are at the steps on the promenade near the foot of Howard St. (diagram site a) and the foot of pier 39 (see diagram for 2-401).

Table of Response Resources

Strategy	hboom	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers	-No	special equip	deploy personnel	tending personnel	SO	
2-400.1	6000	60	500			2	2	1	SSS	10	10	yes	67
2-400.2	1600					4	2	1		8			6

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
Boat launch ramp near pier 50 at Mission Rock Resort, 817 China Basin St. Shoreline access from the Embarcadero and China Basin St.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
There is access for large trucks on most piers and seawalls.

WATER LOGISTICS:
Access limitations: depth, obstructions: There are sunken obstructions to navigation.
Boat Launching, Loading, Docking and Services Available: Boat launching is available near pier 50 at Mission Rock Resort, 817 China Basin St.

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
Flat paved areas for staging and field posts are common throughout this area

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS

2-401-B Pier 39 - Site Summary 2-401 - B

County: San Francisco **GRP:** 4 **Latitude** 37 48 **N** **Longitude** 122 22
USGS: San Francisco North **OSPR Map:** 055 **Last ACP Update** 11/30/2001

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
This site is the basin bounded by Pier 39 on the northeast and seawalls on the other sides. It is an abandoned marina. California sea lions haul out on the former docks of the marina. These floating docks and all of Pier 39 are fronted with a sea wall along the outer perimeter. This area is entirely man made structures. Several times each day, the commuter ferry passes by these floating sea lion haulout docks and moors nearby.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
This is a B priority from August through March.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
This is a haulout for 500 to 600 juvenile and adult California sea lions from August through March. This is a "B" priority from August through March and a "C" priority the remainder of the year.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
California sea lions haul out at this location.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
ELO	Carol Bach	Port of San Francisco	(415) 274-0569	(415) 274-0586
T	GGNRA Dispatch	Golden Gate National Recreation Area	(415) 561-5505	
B	Diane Kopec			
B	Office Marine Mammal Center	Marine Mammal Center	(415) 289-7325	
T	M. Park US Fish and Wildlife Service	(510) 792-0222		

2-401-B Pier 39 - Site Strategy 2-401-B

Latitude Longitude

Count San Francisco **NOAA CHART:** Entrance to San Francisco Bay 18649 37 48 N 122 22 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
This site is the basin bounded by Pier 39 on the northeast and seawalls on the other sides. It is an abandoned marina. California sea lions haul out on the former docks of the marina.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
Large vessel traffic, large wakes, potential for 2 to 3' seas. Piers, pilings

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
Sea lions that inhale or ingest petroleum can be expected to be injured or die.

SITE STRATEGIES

Strategy 2-401.1

(USCG Strategic Objective: **5**) **Dates:** SISRS 02/06/1999 Approved 03/01/2001 last tested 03/01/2001 ACP date 01/01/2002

Objective or Prevention Condition

Exclude oil from entering breakwater - to protect sea lions. Beware of high boat traffic activity here.

Technique Details

(This is a high traffic and commuter terminal; so, there will need to be staff tending the booms at north entry to allow for traffic, unless the marina is closed by IC/UC). Exclude oil from entering the two vessel entrances to Pier 39 with harbor boom. 200 ft is needed at the north entrance and 500 ft is needed at the east entrance. Complete exclusion by booming the north and west side of the marina and breakwater. Approximately 900 ft of harbor boom is needed along the breakwall located on the west side of Pier 41 to prevent oil from passing through breakwater and along western margin. At the north mouth, angle boom such that a shore side skimming operation can be operated on pier 39 (access has been verified by Clean Bay). At east entrance, angle boom such that a shore side skimming (SSS) operation can be operated on near the foot of pier 35. A self propelled skimmer (SPS) may be necessary near the north mouth, and shore side staff should confer with on water Ops through ICS.

Back entry booms with sorbent 700 ft.

Strategy 2-401.2

(USCG Strategic Objective: **5,8**) **Dates:** SISRS Approved last tested ACP date

Objective or Prevention Condition

Sorbent Protection - complete the sorbent barrier in the interior of the marina breakwater to intercept seepage past booms or through breakwater.

Technique Details

Complete the sorbent enclosure inside of breakwalls. Use approximately 1100 ft on east side of Pier 41m to link with the 200 ft at the north entrance. If oil is entering along through the concrete seawall around the Pier 39 marina (east side of pier 39), then an additional 1400 ft of sorbent or swamp boom (and 5 anchors) will be needed to line the east side breakwater to link up with the 500 ft of sorbent and boom at the east entrance (assess and request additional resources). Light anchoring will be needed to keep sorbent positioned near breakwaters and preventing them from hanging up during high tides. (five anchors)

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers	-No	special equip	deploy	personnel tending	personnel	SO
2-401.1	1600			tie boom off to pilings / breakwall	700	1	2	SSS 1	boom tending for traffic;	3	boom boat staff	tend boom for	5
2-401.2	0	0		small anchors	1100	0	1	0	1400 ft sorbent or swamp boom+5	2	skiff staff		5,8

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
From the Oakland-San Francisco Bay Bridge (Highway 80), take the Embarcadero Street exit. Proceed on Embarcadero Street for approximately two miles, Pier 39 will be on your right. Access via "K" dock gate from Pier 39.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
paved access for vehicles

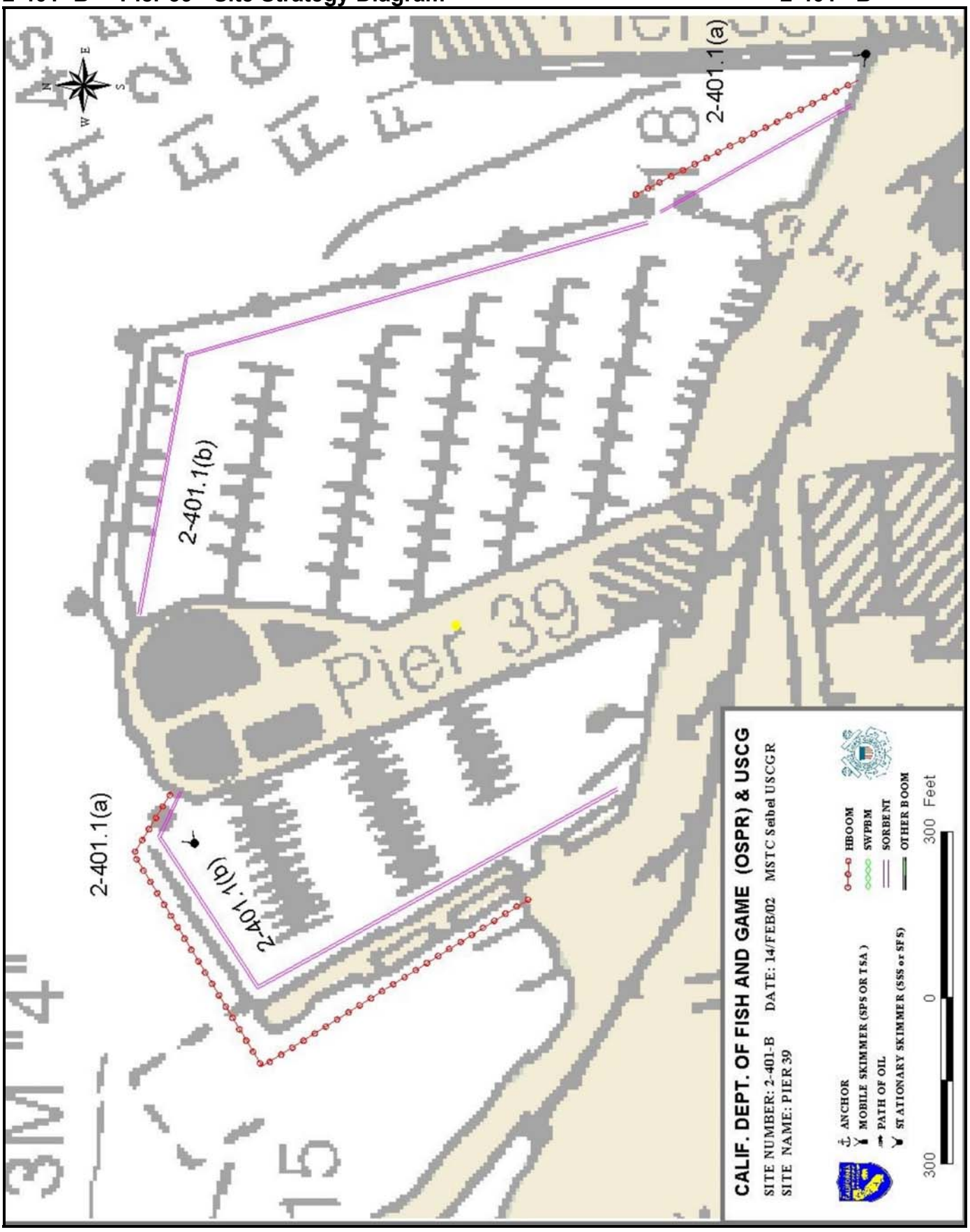
WATER LOGISTICS:

Access limitations: depth, obstructions:	none
Boat Launching, Loading, Docking and Services Available:	Launching: Harbor Drive, Sausalito; Turney St, Sausalito; Berkeley Marina; Emeryville Marina; Fifth Ave. Marina, Oakland; Ballena Isle Marina, Alameda Fuel: Gashouse Cove, San Francisco

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
San Francisco OES will identify available staging areas, field posts and command posts.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


2-401.1(a)
2-401.1(b)
2-401.1(a)
2-401.1(b)
Pier 39
CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-401-B DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: PIER 39
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
300 0 300 Feet

This Page Intentionally Blank

2-402-C Alcatraz Island - Site Summary 2-402 - C

County: San Francisco **GRP:** 4 **Latitude** 37 50 **N** **Longitude** 122 25
USGS: San Francisco North **OSPR Map:** 055 **Last ACP Update** 01/01/2000

SITE DESCRIPTION: **(general characterization of site - geomorphology, habitat, exposure, currents)**
Alcatraz Island is a historical site which includes an old prison and lighthouse. The island is located in central San Francisco Bay and exposed on all sides to extreme tidal current, wave action, and weather conditions. The shorelines are rocky intertidal platforms on the west and southwest sides; a gravel beach extends from the southern rocky platforms to the eastern side; rock cliffs are present on the majority of the west, north, and northeast sides; and pier pilings and dock facilities are present on the east side. The buildings are operated as a National Historic Park by Golden Gate National Recreation Area.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)

RESOURCES AT RISK

HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
Bird breeding colonies all around the island are of primary concern during spring and summer. Rocky intertidal platforms on the east and southwest sides has rich and diverse life year-round. Generally, sensitivity is low because intertidal resources are wet and deluged with wave-wash and, consequently, petroleum does not tend to penetrate or stick. Most nesting habitat is above the influence of spilled material. Also, there is a lot of wave refraction off the island shores which tends to keep oil off the island.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
Site is important because western gulls, cormorants and black crowned night herons breed and rest here.
Pacific herring may spawn and transverse this area in the winter time .
Numerous intertidal species inhabit the rocky areas of this site.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
This is a national historic site. For specific information on historic or cultural resources in this area, contact the Golden Gate National Seashores cultural / historic staff, California Dept of Parks and Recreation - Office of Historic Preservation, (Eric Allison - 916-653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College (707-664-2494))

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
	Dispatch	Golden Gate National Recreation Area	(415) 561-4620	

2-402-C Alcatraz Island - Site Strategy 2-402-C

County: San Francisco **NOAA CHART:** Entrance to San Francisco Bay 18649 Latitude 37 50 N Longitude 122 25 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
Alcatraz Island is a historical site which includes an old prison and lighthouse.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
There is a wash rock located off the west tip of the island and shallow rock platforms and rocks near shore.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
Based on experience, oil doesn't impact this site because waves reflect off the rocky shoreline keeping oil off. Disturbance of nesting birds in Spring and Summer is a real concern. The gravel beach would be difficult to clean if affected. Anchoring is difficult but possible on the W, S , and E sides of the island. Depths range from 30 to 80 ft. close to the island. Strong flood and ebb currents exist here. Back eddies form on the east side during flood tide.

SITE STRATEGIES

Strategy 2-402.1
(USCG Strategic Objective: **8**) **Dates:** SISRS Approved last tested ACP date

Objective or Prevention Condition 01/01/2002

Primary / Initial action - assess for future actions: lessons learned from past spills is shoreline oiling is minimized by wave refraction.

Technique Details

Environmental scientists and spill response experts should assess continuing oil threats shorelines. Lessons learned from past spills is that wave refraction minimizes shoreline oiling. More extensive protection efforts (2-402.2 and .3) should be engaged as spill response environmental specialists determine exigent needs after assessing oil movement.

Strategy 2-402.2
(USCG Strategic Objective: **8**) **Dates:** SISRS Approved last tested ACP date

Objective or Prevention Condition

Protection booming in unusual conditions: When wave reflection will not likely keep oil off shoreline, protect the sensitive rocky intertidal zone on the south eastern part of the island.

Technique Details

In order to protect the sensitive rocky intertidal zone on the south easterly side of the island, use 650 to 800 ft of harbor boom. Position the boom from the dock around the south and west sides to the end of the rocky intertidal bench located near the bird colony on the cliff. The boom will act to deflect oil into the current and protect the shoreline.

Strategy 2-402.3
(USCG Strategic Objective: **7**) **Dates:** SISRS Approved last tested ACP date

Objective or Prevention Condition

Deflection booming in unusual conditions: When wave reflection will not likely keep oil off shoreline, deflect oil away from and around west end of island when wave refraction is unlikely to keep oil off the shoreline

Technique Details

On the west end of the island, position boom in a deflection wedge configuration off the bell buoy or anchored to the reef to deflect oil into current away from island. Boom legs 600 to 1000 ft each.

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers	-No	special equip	deploy personnel	tending personnel	SO
2-402.1	800			40# danforths w/ 1/2" chain		1		0		3	2	8
2-402.2	2100	0	0	40# danforths w/ 1/2" chain	0	2	0	0		6	7	

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
Alcatraz is an island located in central San Francisco Bay. Access is available by boat only.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
Access available by water only.

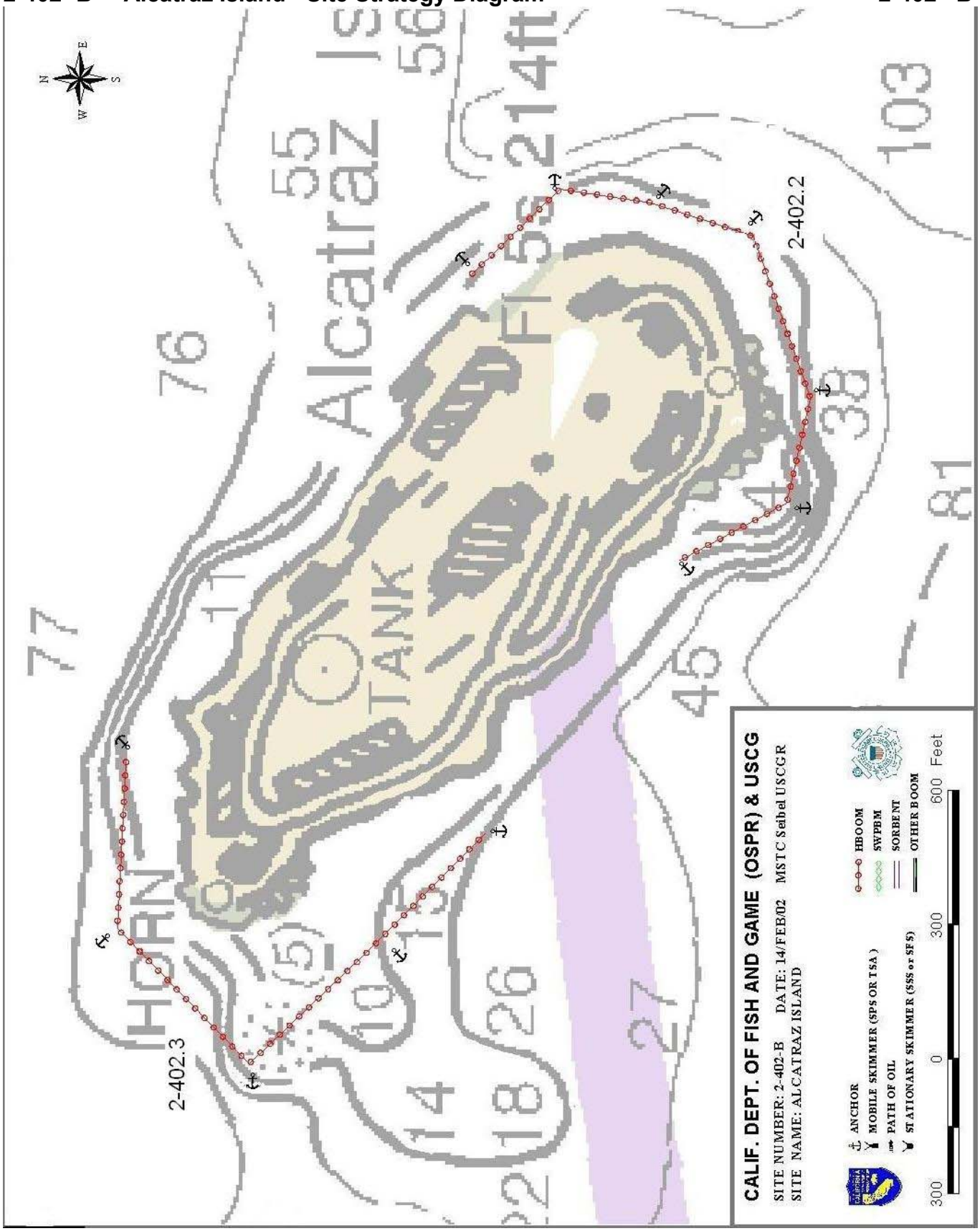
WATER LOGISTICS:

Access limitations: depth, obstructions:	Submerged rocks on west and south shores
Boat Launching, Loading, Docking and Services Available:	National Parks Service maintains landing at east end of island. Otherwise boat services are at San Francisco shoreline

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
Staging, storage and skimming systems from land could be accommodated on the dock located on the east side of the island. Extensive services are at the SF shoreline

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


Alcatraz Is
214ft
TANK
HORN
2-402.2
2-402.3
CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-402-B DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: ALCATRAZ ISLAND
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER ($SS or $FS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
300 0 300 600 Feet

This Page Intentionally Blank

2-403-A Crissy Field Tidal Marsh - Site Summary 2-403 - A

County: San Francisco **GRP:** **Latitude** 37 48.3 **N** **Longitude** 122 27.3 **W**
USGS: San Francisco North **OSPR Map:** **Last ACP Update**

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
Crissy Field Tidal Marsh is a restored wetland at the east end of Crissy Field and includes a tidal channel which opens to San Francisco Bay at the east end of the marsh. This wetland lies within Golden Gate National Park. It was constructed and opened to tidal exchange in 1999. It is being revegetated with native species. It is an uncommon habitat for waterbirds and shorebirds in an urban habitat, thus, has great value as a resting area. The tidal inlet has silted in remarkably and has not yet scoured a low flow channel. There is a large community focus and investment in this marsh.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
Marshes have " A " sensitivity and protection priority year-round.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
This is a restored tidal marsh. Native species are being established. Tidal marshes are very vulnerable to oil impacts

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
This marsh is important resting and foraging habitat for bay birds. It is particularly important bird habitat in an otherwise urban setting.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
For specific information on historic or cultural resources in this area, contact the Golden Gate National Seashores main office, cultural resource specialist, the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125, and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)).

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
CBLCT	Dispatch Golden Gate National Recreation Area		(415) 561-4620	
B	Main Offic GFNMS	Gulf of the Farallons National Marine Sanctur	(415) 561-6622	
BTE	Daphne Hatch	Golden Gate Natnl Recreaton Area a	(415) 331-0744	
B	Jan Roletto	GFNMS - Gulf of the Farallons Natnl Marine S	(415) 561-6622	(415) 561-6616

2-403-A Crissy Field Tidal Marsh - Site Strategy 2-403-A

County: San Francisco **NOAA CHART:** Entrance to San Francisco Bay 18649 Latitude 37 48.3 N Longitude 122 27.3 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
Crissy Field Tidal Marsh is a restored wetland at the east end of Crissy Field and includes a tidal channel which opens to San Francisco Bay at the east end of the marsh.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
Be aware of swift currents.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
The concern is to keep oil from entering the marsh by excluding it at the tidal entry channel. Avoid disturbing wildlife and tracking oil around the site. This is a high visibility site with a lot of public awareness.

SITE STRATEGIES

Strategy 2-403.1

(USCG Strategic Objective: **5**) **Dates:** SISRS Approved 11/12/1999 last tested ACP date 01/01/2000

Objective or Prevention Condition

Primary: Exclude oil from entering the mouth

Technique Details

Exclude oil from entering the mouth of the tidal channel using a chevron boom deployment. Currents in the channel are strong (>2knts). Anchor boom to shore west of the tidal mouth and angle out at about 45 degrees with 100 ft Hboom and then angle back to shore east of mouth using 300 ft of Hboom. Be sure to provide for a boom seal which will keep oil from getting around the shore boom ends at low tide.

Strategy 2-403.2

(USCG Strategic Objective: **5,6**) **Dates:** SISRS Approved 11/12/1999 last tested ACP date 01/01/2000

Objective or Prevention Condition

Exclude / collect: capture of oil which escapes past primary protection

Technique Details

Deploy deflection to shore side collection in the tidal channel. Currents in the tidal channel are swift (can exceed 2 knots). Deploy riverboom (swamp boom) (300') at a very slight angle to collect oil on the east bank of the channel. Use mid boom anchor(s) and lines to keep boom from forming centenary curves (and promoting entrainment of oil). Establish a skimming pocket and backup collection boom (100' swampboom) to confine accumulating oil and allow collection. Back with sorbent. This deployment should be done from land: with the permission of Golden Gate National Seashore, you may drive right to the location. There is a foot bridge across the channel, and the channel is very shallow or empty at some tides.

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers	-No	special equip	deploy personnel	tending personnel	SO
2-403.1	400			4/22+/danforth w chain			1	0		3	3	5
2-403.2	400			3/22+/danforth & Stakes & line	300	0	0	2		2	2	5,6

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
By land, Crissy Field is just east of the Golden Gate Bridge and is just north of Hwy 101. The wetland is at the east end of Crissy Field.
By boat, the opening to the wetland is about a half mile west of Marina Park.

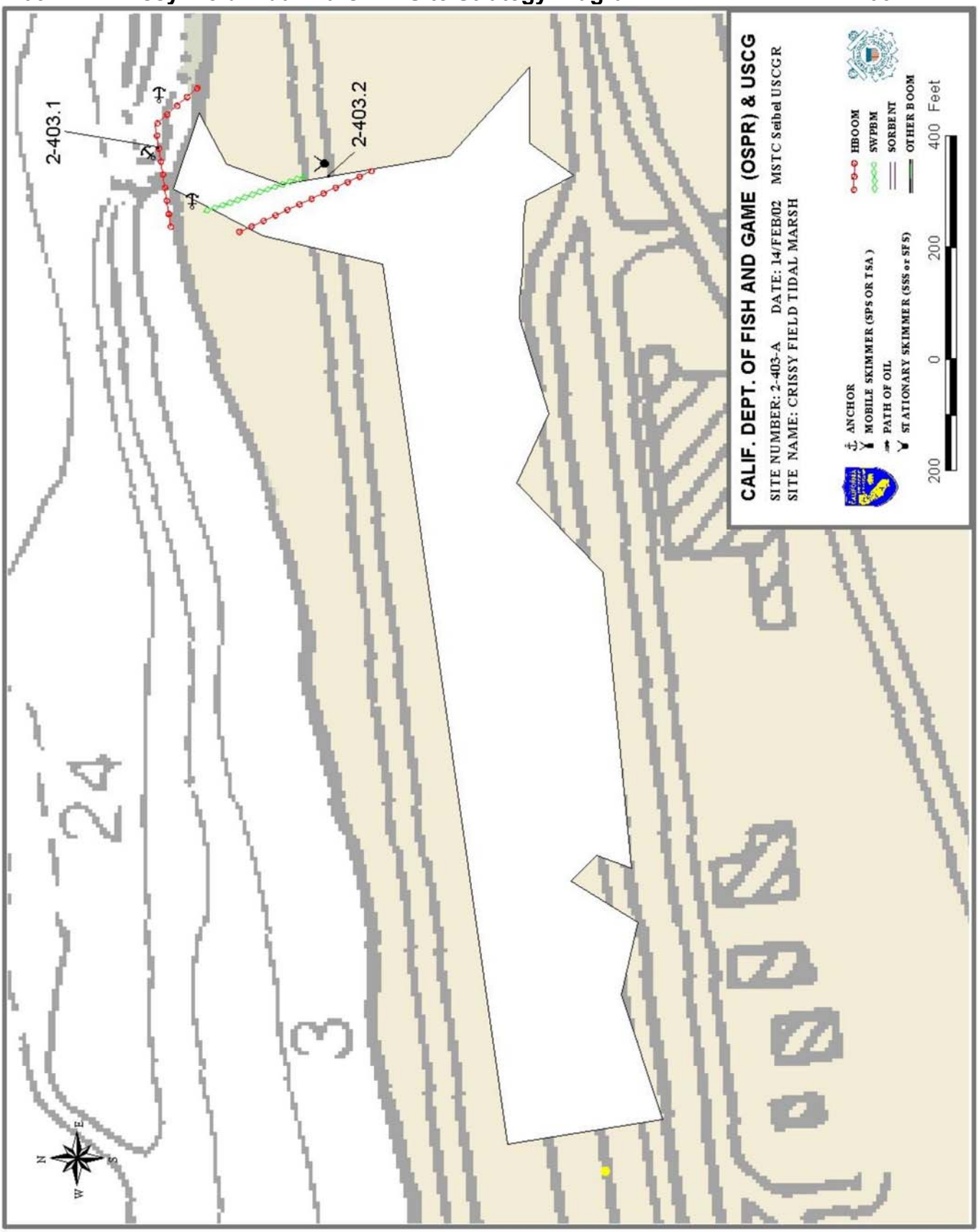
LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
All equipment types with Park Service authorization

WATER LOGISTICS:
Access limitations: depth, obstructions: good depth
Boat Launching, Loading, Docking and Services Available: Nearest marina is Gas House Cove a mile to the east.

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
Crissy Field is a possible staging area for local activities.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


2-403.1
2-403.2
CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-403-A DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: CRISSY FIELD TIDAL MARSH
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
200 0 200 400 Feet
24
3
N
E
S
W

This Page Intentionally Blank

2-420-A Richardson Bay Marshes - Site Summary 2-420-A

County: Marin **GRP:** 4 **Latitude** 36 56 N **Longitude** 122 30
USGS: San Rafael, San Quentin, San Fran N **OSPR Map:** **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
The site includes Richardson Bay and the marshes and mudflats at the back bay arms. Richardson Bay is a shallow bay with many natural resources, most notable among them are the pickleweed marshes in the Pickleweed Inlet arm and in the northwest shore. The mouth of the Bay is about one mile wide and the length of the bay is about four miles. The much of the margin is urbanized or rocky. The average depth at low tide is about four feet, though the south side, where the channel is located, is generally deeper. There are extensive mudflats, and the bay bottom is a mud. There is a diffuse bed of eelgrass in the south central portion of the bay..

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
Marshes are A-priority at all times. This is important habitat for migratory marsh and water birds during winter and spring and important herring spawning habitat from November to February.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
There are a variety of habitats at risk. The pickleweed marshes are in the north and west margins, and there is a wildlife reserve in the north bay. The mudflats are habitat for a rich infauna and are foraging areas for birds and fish. The rocky shore lines are intertidal habitat. Exposed rocks are resting habitat for birds and seals. The eelgrass and wharves are prime spawning habitat for herring.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
There are a wide variety of birds which use the bay and the marshes, including endangered clapper rail and brown pelicans.
The pickleweed marshes are habitat for the endangered saltmarsh harvest mouse. Harbor seal haul out on the rocks.
This is an important spawning area for herring.
Fish concerns are focused on the spawning habitat of pacific herring which use the diffuse eelgrass beds, wharves and docks as spawning substrate.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
BEL	Baylands Nature Preserve		(650) 329-2506	
B	Sarah Allen	Pt. Reyes National Seashore	(415) 464-5187	(415) 464-5182
B	Beth Huning	Richardson Bay Audubon Center Director	(415) 388-2524	
B	Diane Kopec			
BEL	Marin Co Parks Dispatch	Marin County Parks and Open Space	(415) 499-6387	
	Bob Stewart		(415) 498-6405	
R	Meryl Sundrove	RBAC Education Coordinator	(415) 388-2524	

2-420-A Richardson Bay Marshes - Site Strategy 2-420-A

Latitude Longitude

County: Marin **NOAA CHART:** 18649 Entrance to San Francisco Bay 3 6 56 N 122 30 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site

The site includes Richardson Bay and the marshes and mudflats at the back-bay arms.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site

Be aware of shallows and obstructions.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)

The main objective is to exclude oil from Richardson Bay by exclusion booming of the mouth. This can successfully be executed just

SITE STRATEGIES

Strategy 2-420.1

(USCG Strategic Objective: **5**) **Dates:** SISRS 05/17/1999 Approved 04/24/2001 last tested 04/24/2001 ACP date 11/30/2001

Objective or Prevention Condition

Primary: Exclude oil from entering Richardson Bay by booming the mouth.

Technique Details

Currents are aggressive at the mouth of the bay but not just back from the mouth. Because of these light currents inside the mouth, oil can be excluded there by booming, providing that booms are angled in the currents of the south channel and, to a lesser extent, at the north margin.

1. Exclude oil from the south channel by deploying about 1500 ft of 9X9+ boom from the breakwater north of the ferry landing to (or near) Red channel marker "4". Cascade boom in 2 or 3 lengths to allow vessel passage through this exclusion.
2. Boom across the bay mouth from Red channel marker 4 to the Tiburon shore with 4500 ft of 9X9+ boom. Keep inside (west) of cone rock. The last 600 feet of boom near the Tiburon shore may need to be angled in the current if there is threat of entrainment due to the mild currents near shore. Keep boom continuous or close enough to tie boom ends together and seal with sorbent.

Strategy 2-420.2

(USCG Strategic Objective: **5,6**) **Dates:** SISRS Approved 05/17/1999 last tested ACP date 01/01/2000

Objective or Prevention Condition

2ndary: exclude/collect oil which has entered Richardson Bay

Technique Details

Establish the following collections / exclusions:

1) Deploy 1000' 9X9+ diagonal from Strawberry Pt. to the jetty with a J-hook collection pocket: back and overlap the pocket and deflection (300' 4X4+). Use channel markers and anchors to maintain diagonal in the current. A cascade may be necessary to accommodate boat traffic. If there are skimmable quantities of oil, deploy a shore side skimming system (SSS) for collection.
2) Deploy 1500' 9X9+ diagonal from Strawberry Pt. to the east with a J-hook collection pocket: back and overlap the pocket and deflection. If there are skimmable quantities of oil, deploy a shore side skimming system (SSS) for collection.
3) Close the tidegate to Belvedere Lagoon at north east margin.

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers	-No	special equip	deploy personnel	tending personnel		SO
2-420.1	6000			14/22+/danforths + chain	500	6	1	0	Bboats capable of shallows &	17	boom boat staff	2	5
2-420.2	2500	600		12/22+/danforths + chain	600	4	1	2 SSS	Bboat: shallow draft/; recommende	14	14	2 + skimming	5,6

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)

Closest water access is from Marinas in Sausilito which open to Richardson Bay. By vehicle, marshes can be accessed by exiting Hwy 101 at Sausilito or Tiburon at Almonte or Tiburon Blvd.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)

All types

WATER LOGISTICS:

Access limitations: depth, obstructions: Shallows everywhere; exceeding shallows in back-bay & north-bay

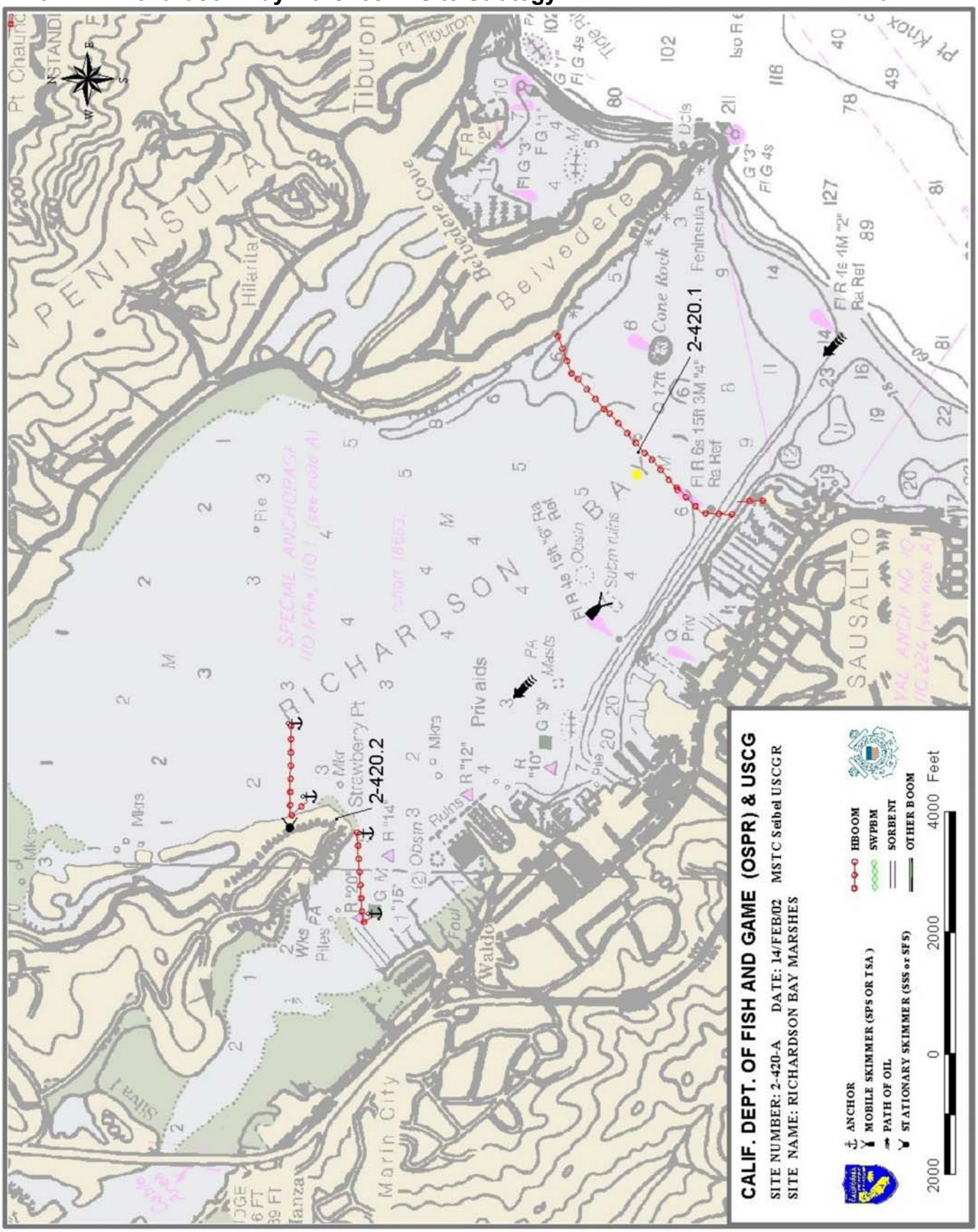
Boat Launching, Loading, Docking and Services Available: Launch on site at Clipper Yacht Harbor, Harbor Dr. Sausilito (415) 332-3500. Many marinas and services available.

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:

PLE dock is onsite and is most convenient site for staging and out post. Many facilities are available at Sausilito.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-420-A DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: RICHARDSON BAY MARSHES
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
2000 0 2000 4000 Feet
2-420.1
2-420.2
RICHARDSON BAY
SAUSALITO
Belvedere
Tiburon
PENINSULA
Marin City

This Page Intentionally Blank

2-421-X/C Tiburon Peninsula - Site Summary 2-421-X/C

County: Marin **GRP:** 4 **Latitude** 37 54 **N** **Longitude** 122 27
USGS: San Quentin **OSPR Map:** 050 **Last ACP Update** 01/01/2000

SITE DESCRIPTION: **(general characterization of site - geomorphology, habitat, exposure, currents)**
The site is the eastern shore of the Tiburon Peninsula from Point Chauncey in the north to Bluff Point in the south. There are a variety of shoreline
types on the Tiburon Peninsula. They vary from rock bluff and platform to cobble and sand beaches. Most are exposed to moderate and high energy from boat wakes, wind waves and strong currents. The Tiburon Peninsula is a residential area. Most shorelines are accessible only by water. There are marinas on the south shore of the Tiburon Peninsula. Oil and debris collect here naturally.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
Public health and safety and birds feeding on the beaches and in nearshore waters are the major concerns. The shore is well populated by marine plants and animals living on rock surfaces and in the sand below the high tide level. Herring spawn here during the winter.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
Brown pelican, cormorant and other seabirds.
Harbor seals and sea lions use this area.
The shore is well populated by marine plants and animals living on rock surfaces and in the sand below the high tide level.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
For specific information on historic or cultural resources in this area, contact the California Dept of Parks and Recreation - Office of Historic Preservation and the Northwest Information Center, (Leigh Jordan, Sonoma State College (707-664-2494))

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
L	Marine County Office of Emergency Services		(415) 499-6584	
BTLE	Marin Co Parks Dispatch	Marin County Parks and Open Space	(415) 499-6387	

2-421-X/C Tiburon Peninsula - Site Strategy

2-421-X/C

County: Marin **NOAA CHART:** Entrance to San Francisco Bay 18649 Latitude 37 54 N Longitude 122 27W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
The eastern shore of the Tiburon Peninsula from Point Chauncey in the north to Bluff Point in the south

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
Submerged rocks along most beaches, steep cliffs along most shorelines.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
Oil tends to collect in the coves. Look for oil here and plan for manual cleanup of beaches.

SITE STRATEGIES

Strategy 2-421.1

(USCG Strategic Objective: **9**) **Dates:** SISRS Approved 02/06/1999 last tested ACP date 01/01/2000

Objective or Prevention Condition

Collection: The eddies off shore and the beaches are natural collection areas. Set booms to beach oil or retain for on water skimming.

Technique Details

Look for oil offshore and on beaches of this shoreline. Direct on-water recovery vessels to concentrations offshore and cleanup crews to oil stranded on the beaches.

Landing craft or other shallow water craft capable of safely putting cleanup crews ashore on gravel beaches and picking up oily waste from same beaches.

Strategy 2-421.2

(USCG Strategic Objective: **6**) **Dates:** SISRS Approved 04/01/2001 last tested ACP date 11/30/2001

Objective or Prevention Condition

collection site: deflect oil to natural collection site

Technique Details

By deploying boom from the two points north of Bluff Point, oil may be deflected to natural collection sites. Two 600 ft booms should be placed from the shore just north of each point into the current at about 40 degree angles to direct eddying oil to shoreline. Waters near shore are deep. Depending on oil type, oil snare or sorbents at shore may aid collection and reduce cleanup.

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers	-No	special equip	deploy personnel	tending personnel		SO
2-421.1	0	0	0 0		0	0 0			landing craft	10	10	9	
2-421.2	1200	0	0			1	0	0		3		boom boat staff	6

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
Take highway 101 to Mill Valley, five miles north of Golden Gate Bridge. Take Tiburon Blvd. Exit, state highway 131. Go east on Tiburon Blvd. To Trestle Glen Blvd (2miles). Turn left on Tressle Glen Blvd. Take Tressle Glen Blvd one mile to Paradise Dr. Turn right on Paradise Dr. Go two miles to Paradise Beach County Park or three miles to Tiburon Oceanographic Center. There is a very small launch ramp at the Tiburon Oceanographic Center.
To launch boats take highway 101 to Sausalito, 3 miles north of Golden Gate Bridge. Take Bridgeway exit at north end of Sausalito about 1 mile south of the highway 1 exit. Go southeast on Bridgeway towards downtown Sausalito and the COE bay model. Turn left on Harbor Drive. Take harbor drive to the launch ramp at Clipper Yacht Harbor.

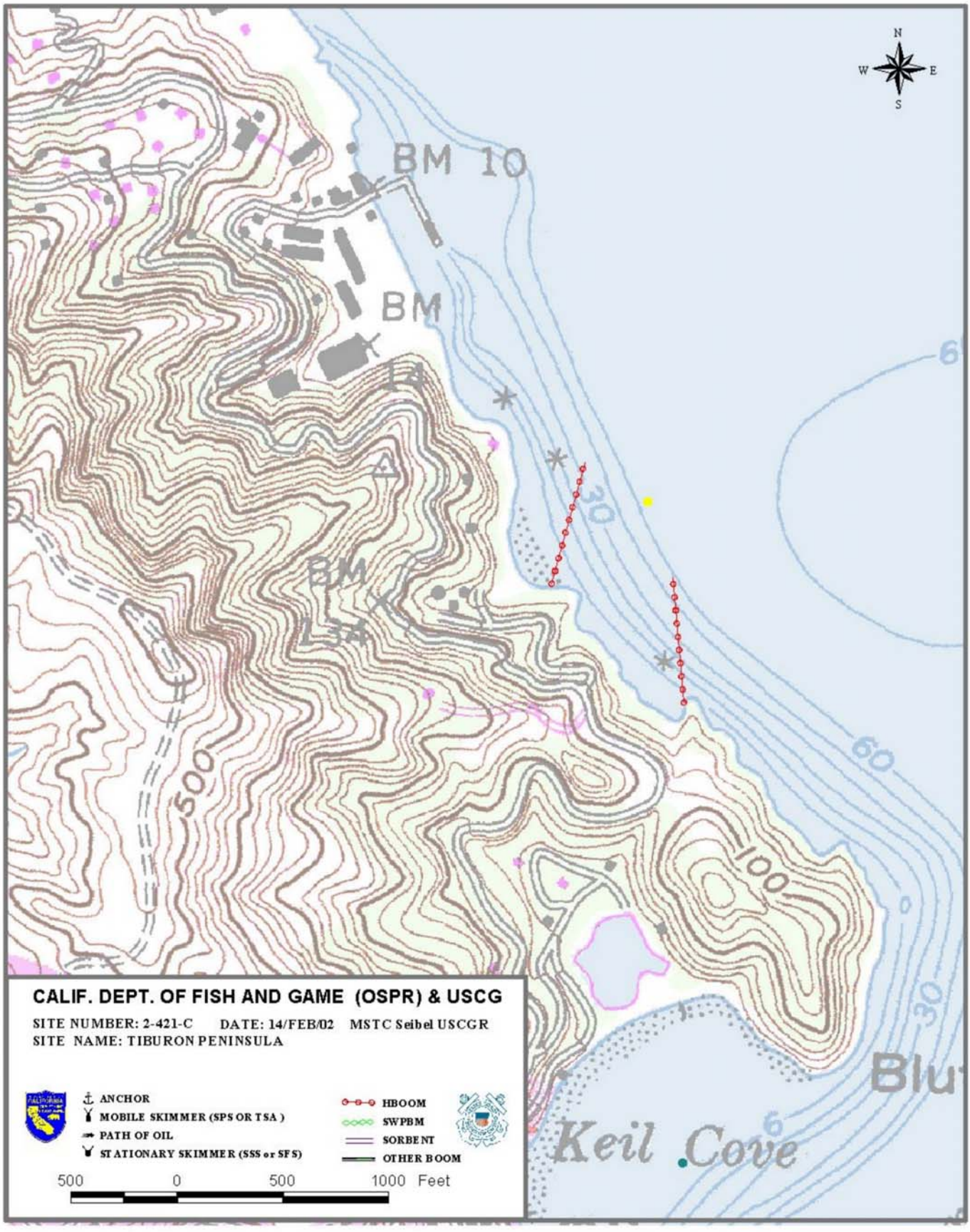
LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
No land access

WATER LOGISTICS:
Access limitations: depth, obstructions: Submerged rocks, small surf possible,
Boat Launching, Loading, Docking and Services Available: Full services available in Sausalito and Richmond

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
Space for staging and field post available at Tiburon Oceanographic Center.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager ell phone

ADDITIONAL COMMENTS


N
W
E
S
BM 10
BM
BM
30
60
100
500
Keil Cove
CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-421-C DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: TIBURON PENINSULA
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
500 0 500 1000 Feet

This Page Intentionally Blank

2-422-A/C Keil Cove - Site Summary 2-422-A/C

County: Marin **GRP:** 4 **Latitude** 37 55 **N** **Longitude** 122 27
USGS: San Quentin **OSPR Map:** 050 **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
Keil Cove is located on the southeastern shore of the Tiburon Peninsula, adjacent to Raccoon Straits and immediately west of Bluff Point. Keil Cove is a coarse sand and pebble beach bounded by rocky headlands on the south east end of the Tiburon Peninsula. There are eelgrass beds in the cove which is the primary concern at this locale. The blades of the eelgrass remain below the surface of the water except at the lowest of tides. Although some of the strongest currents in San Francisco Bay occur immediately offshore of this cove, the cove itself is more protected from wind waves and strong currents than most of the Tiburon Peninsula. The adjacent land is privately owned residential property.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
Herring spawn here during the winter. Eelgrass tops are exposed at low tides.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
Eelgrass beds are vulnerable only on the lowest tides. Herring spawn here during the winter. The coarse sand beach is very difficult to clean.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
Brown pelican, cormorants.
Herring spawn here in the winter time.
Eelgrass beds

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
	Marine County Office of Emergency Services		(415) 499-6584	

2-422-A/C Keil Cove - Site Strategy 2-422-A/C

County: Marin **NOAA CHART:** Entrance to San Francisco Bay 18649 Latitude 37 55 N Longitude 122 27 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
Keil Cove is located on the southeastern shore of the Tiburon Peninsula, adjacent to Raccoon Straits and immediately west of Bluff Point.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
The water is very shallow throughout the cove, and the eelgrass may foul propellers at low tide. Although, the gravel beach is steep, experienced boat operators have found that landing of beach cleanup personnel was easiest at the Bluff Point end of the beach.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
Eelgrass beds are vulnerable only on the lowest tides, but once oiled would, continue to produce a sheen for several weeks and greatly extend the cleanup period. Herring spawn here during the winter. The coarse sand beach is very difficult to clean.

SITE STRATEGIES

Strategy 2-422.1 (USCG Strategic Objective: **8**) **Dates:** SISRS Approved last tested ACP date
02/06/1999 06/01/2000 01/01/2000

Objective or Prevention Condition
06/01/2000

Exclusion/Protection booming for cove, eelgrass, and coarse sand beach.

Technique Details

Deploy boom from just west of Bluff Point to the rock, or gravel beach behind rock, at the southwest end of the cove. Deploy the boom in the shallow, quiet water of the cove. Use sufficient anchors, every 100 to 200 feet, to prevent the boom from moving into the currents and wind of Raccoon Strait. Two thousand four hundred feet of boom with four to six inches of freeboard should be

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers -No	special equip	deploy personnel	tending personnel		SO
2-422.1	0	2400		8 / 20# w/ 10' 1/2" chain		4		1,200 feet of 1/2" anchor rope	8	8	yes	8

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
Land access is through private property. Marin County OES may be able to get permission for access across private property. Take highway 101 to Mill Valley, Take the Tiburon Blvd (state highway 131) exit. Take Tiburon Blvd east to the business district of Tiburon. Continue on Paradise Dr. to the residences past Agreste Av.
Access is best by boat. To launch boats take highway 101 to Sausalito, 3 miles north of Golden Gate Bridge. Take Bridgeway exit at north end of Sausalito about 1 mile south of the highway 1 exit. Go southeast on Bridgeway towards downtown Sausalito and the COE bay model. Turn left on Harbor Drive. Take harbor drive to the launch ramp at Clipper Yacht Harbor.

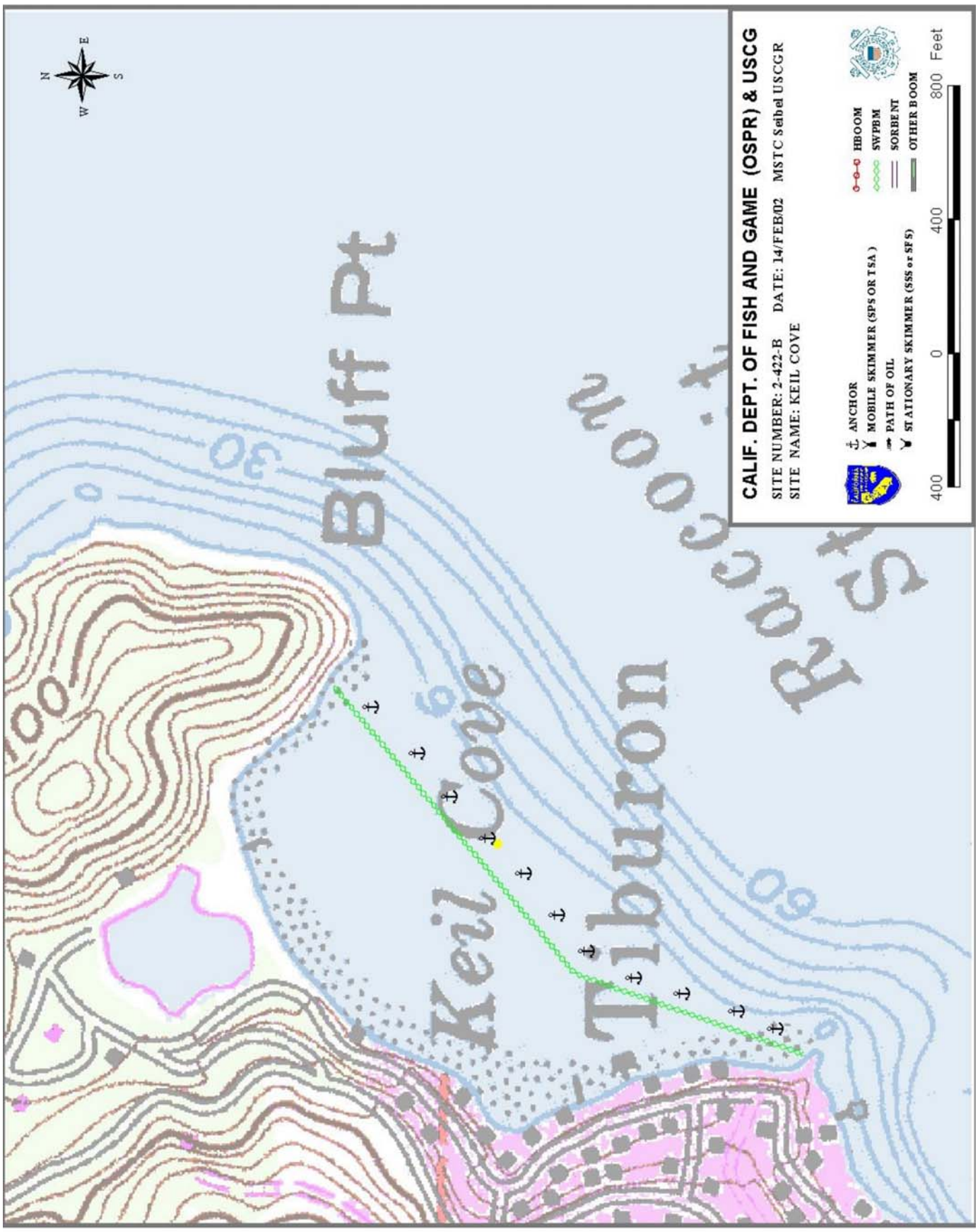
LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
foot only

WATER LOGISTICS:
Access limitations: depth, obstructions: Very shallow water.
Boat Launching, Loading, Docking and Services Available: Services at Sausalito and Richmond

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
Possible staging and field post at Tiburon Oceanographic Center.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-422-B DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: KEIL COVE
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
400 0 400 800 Feet
Bluff Pt
Keil Cove
Tiburon
Raccoon Strait
N
E
S
W

This Page Intentionally Blank

2-423-X/C Angel Island - Site Summary 2-423-X/C

County: Marin **GRP:** 4 **Latitude** 37 54 **N** **Longitude** 122 27
USGS: San Quentin **OSPR Map:** 055 **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
Angel Island is a state park located about one mile SE of the Tiburon Peninsula. It has an area of about one square mille, and a maximum elevation of 781 feet. There is a dock and numerous floating berths in Ayala Cove located on the North Western side of the island. A road runs the perimeter of the island. Sand beaches exists on the North Eastern, Eastern and South Eastern shores. Rock bluffs make up a large part of the shoreline. Strong currents run through Raccoon Straits (the deep channel located on the North West side of the island). Back eddies occur along the South Eastern shore and probably at numerous other locations around the island. An underwater cable is located between Ayal cove and Pt Stuart. Shorelines have been oiled to different degrees in several spills, and the eastern shoreline is a natural collection area for oil and other floating debris. This makes the points along the eastern shoreline natural collection areas.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
Herring spawn here during the winter.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
Herring spawn here during the winter. Brown pelicans spend time on and around this island.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
Various sites around the island are used by cormorants and other sea birds fish in Raccoon Strait for perching and probably nesting.
Harbor seals and sea lions haul out at various locations around the island.
Herring spawn here during the winter.
The shore is well populated by marine plants and animals living on rock surfaces and in the sand below the high tide level.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
There are historic buildings and other cultural resources present. Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
E	Marine County Office of Emergency Services		(415) 499-6584	

2-423 - X/C Angel Island - Site Strategy 2-423 - X/C

County: Marin **NOAA CHART:** Entrance to San Francisco Bay 18649

Latitude		Longitude	
37 54	N	122 27	W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
Angel Island is a state park located about one mile SE of the Tiburon Peninsula. It has an area of about one square mille, and a maximum elevation of 781 feet.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
Submerged rocks along most beaches, steep cliffs along most shorelines.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
Oil tends to collect on the eastern shore of the island, particularly on the beaches north of Blunt Point and Quarry Point. The beach between Blunt Point and the pier about 100 yards to the north is a mixture of coarse sand and gravel. Petroleum may penetrate this beach to a depth of six inches. The fine grained sand beach to the north would be much easier to clean. A similar situation exists to the north of Quarry Point where gravel beaches are both north and south of a fine sand grained beach.

Strategy 2-423.1

(USCG Strategic Objective: **8**) **Dates:** **SISRS** Approved 02/06/1999 last tested ACP date 01/01/2000

Objective or Prevention Condition

Collection: natural collection at Blunt Pt & Quarry Pt.

Technique Details

The following are the instructions to use this area as a collection site with a minimal amount of cleanup.

A) At Blunt Pt deploy 600 feet of boom (4 to 8 inch freeboard) in a northeasterly direction from the sand beach north of the pier to collect oil. To prevent oiling of the gravel beach south of the pier, deploy 800 ft of harbor boom from the south side of Blunt Point to the pier to the north of Blunt Point.

B) At Quarry Point, the shoreline and the eddies just off the shoreline are natural collection areas for shoreline and onwater recovery. Collect oil on fine grained beach about 1000' north of Quarry Pt by deploying 600 feet of boom (4 to 8 inch freeboard) from the beach in a northeasterly direction. To prevent oiling of the gravel beach to the north of the collection site, deploy 1,000' of boom parallel to the gravel beach. Anchor the ends at the high tide line and anchor the midpoint 50 feet offshore. To prevent oiling of the gravel beach to the south of the collection beach, deploy 600 feet of harbor boom from the shoreline near the pier at Quarry Pt to the south end of the fine grained sand beach.

C) Look for oil offshore. Direct on-water recovery vessels to concentrations offshore. Set up Shore Side Skimming (SSS) as necessary. Both sites have some roads and piers for support of SSS.

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring		sorb	Bb/skif	skimmers -No	special equip	deploy personnel	tending personnel	SO
2-423.1	2600	1200	0	20	20# w/ 20' 1"chain	0	2	1	1000' 1/2" anchor line	10	yes	8

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
Angel Island is a state park located SE of the Tiburon Peninsula. Access to the island is by water only. Ferry service is available from Tiburon. Numerous launch ramps and boat launching facilities are located in Sausalito. To launch boats take highway 101 to Sausalito, 3 miles north of Golden Gate Bridge. Take Bridgeway exit at north end of Sausalito about 1 mile south of the highway 1 exit. Go southeast on Bridgeway towards downtown Sausalito and the COE bay model. Turn left on Harbor Drive. Take harbor drive to the launch ramp at

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
Equipment and vehicles would have to be transported over water.

WATER LOGISTICS:

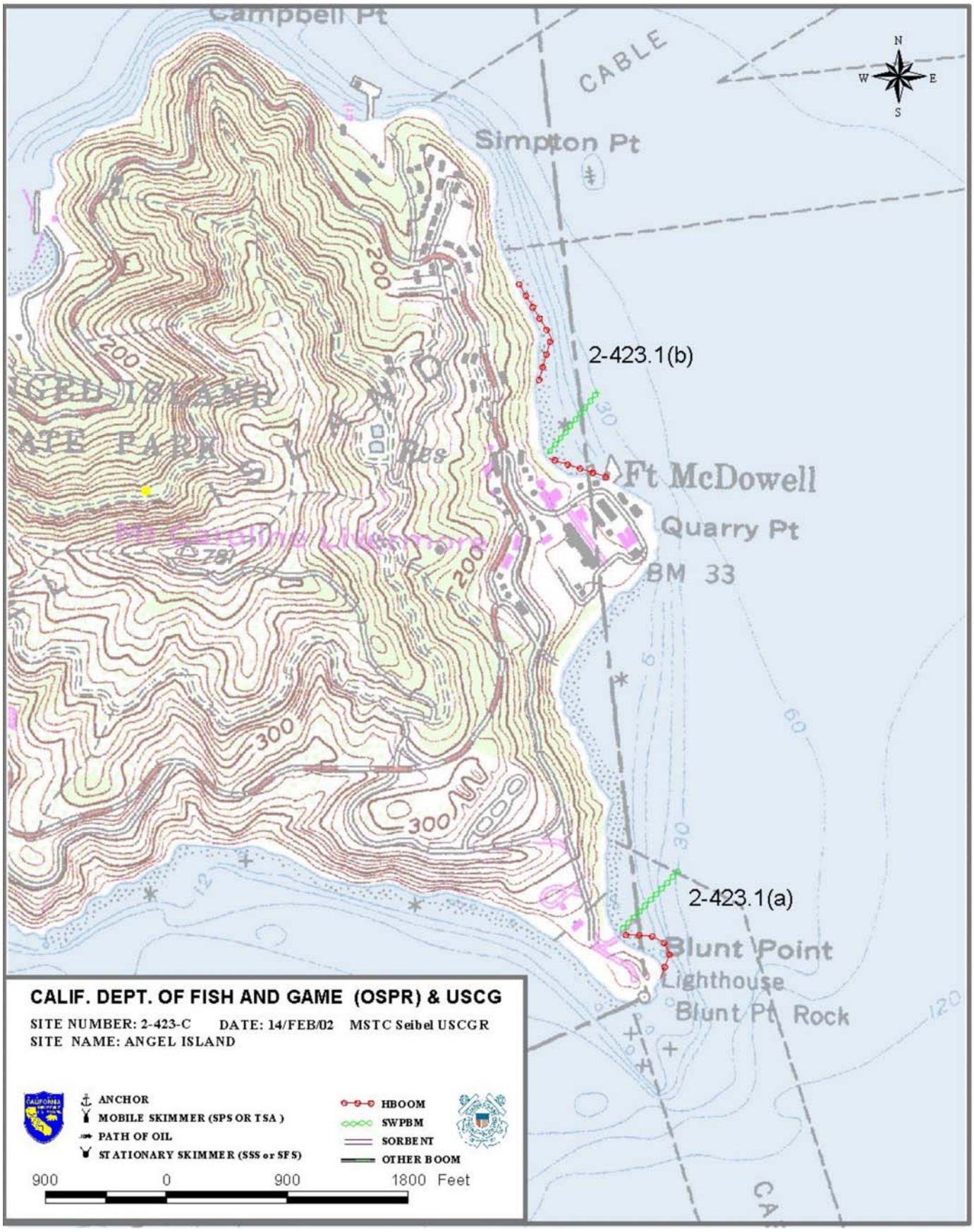
Access limitations: depth, obstructions: Submerged rocks off most beaches.

Boat Launching, Loading, Docking and Services Available: Berths are available in Ayala Cove. There are piers just north of Blunt Point and at Quarry Point.

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
California Parks and recreation can make space available for staging areas, and field posts. Marin County OES may be able to identify a command post.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


Campbell Pt
CABLE
Simpton Pt
N
W
E
S
2-423.1(b)
Ft McDowell
Quarry Pt
BM 33
2-423.1(a)
Blunt Point
Lighthouse
Blunt Pt Rock
CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-423-C DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: ANGEL ISLAND
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
900 0 900 1800 Feet

This Page Intentionally Blank

2-424-B/X Paradise Cove - Site Summary 2-424-B/X

County: Marin **GRP:** 4 **Latitude** 37 54 N **Longitude** 122 27 W
USGS: San Quentin **OSPR Map:** 050 **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
Paradise Cove lies on the north east side of the Tiburon Peninsula. It is bounded on the south by Point Chauncey and on the north by Paradise Cay. A narrow, fringing marsh exists along the sandy shore. Mudflats extend out from shore. Eelgrass beds are scattered throughout the site in shallow water.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
This is a B priority year round.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
This is a B priority year-round. Brown pelicans roost in and feed at this site. Eelgrass beds are most vulnerable during summer months. Herring spawn at this site in the winter.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
Brown Pelican roost and feed here.
Herring spawn here in the winter time.
The shore is well populated by marine plants and animals living on rock surfaces, in the sand below the high tide level, and in the eelgrass eelgrass

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX

2-424 - B/X Paradise Cove - Site Strategy

Count Marin **NOAA CHART:** Entrance to San Francisco Bay 18649 **Latitude** 37 54 N **Longitude** 122 27 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site

Paradise Cove lies on the north east side of the Tiburon Peninsula. It is bounded on the south by Point Chauncey and on the north by Paradise Cay.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)

This is a natural collection zone: oil tends to collect in nearshore eddies, particularly in the southern part of the cove adjacent to Pt Chauncey, but little comes ashore. Skimmable quantities of oil can be easily collected by self propelled skimmers (SPS) because the waters are deep. Natural resources of concern are brown pelicans which use this area for feeding and roosting, and eelgrass which is vulnerable at low tide.

SITE STRATEGIES

Strategy 2-424.1

(USCG Strategic Objective: **7**) **Dates:** **SISRS** **Approved** 02/06/1999 **last tested** **ACP date** 01/01/2000

Objective or Prevention Condition

deflect oil away from shoreline into the main channel on flood tide

Technique Details

Deploy 1000 ft 9X9+ deflection booms at both Point Chauncey and El Campo to deflect oil out of nearshore eddies and divert oil into the main channel for on-water skimming operations for flooding tide. If booms are to be deployed for deflection only and not to collect oil in the eddies, booms must be anchored off shore to allow escapement of oil on ebb tide. During the flood tide, on-water recovery may be effective by locating an on-water skimmer at the tail edge of the El Campo diversionary boom: a self-propelled skimmer is recommended for such skimming.

Strategy 2-424.2

(USCG Strategic Objective: **6**) **Dates:** **SISRS** **Approved** **last tested** **ACP date**

Objective or Prevention Condition

Deflect / Collect oil in nearshore eddies

Technique Details

This is a natural collection zone: oil tends to collect in nearshore eddies, particularly in the southern part of the cove adjacent to Pt Chauncey, but little comes ashore. Skimmable quantities of oil can be easily collected by self propelled skimmers (SPS) because the waters are deep. Deploy 1000 ft 9X9+ deflection booms at both Point Chauncey and El Campo to deflect/divert oil out of currents into nearshore eddies. If booms are to be deployed for collecting oil in the eddies, booms must be anchored to or on shore to retain oil on ebb tide. To minimize oiling of shoreline, shoreline protection booming is recommended (see 2-424.3).

Strategy 2-424.3

(USCG Strategic Objective: **8**) **Dates:** **SISRS** **Approved** **last tested** **ACP date** 11/30/2001

Objective or Prevention Condition

Shoreline Protection of Paradise Cove

Technique Details

Use 4,500 ft of boom (4X4 under calm conditions and 9X9 when there is chop at this protected location) to protect Paradise Cove shoreline. Boom should be used to prevent oiling of vegetation and shoreline and to enhance on-water recovery. Oil tends to collect in the southern part of the cove adjacent to Pt Chauncey, but little comes ashore. Incident command should be advised if skimmable quantities of oil are observed off-shore so that SPS skimmer can collect.

Table of Response Resources

Strategy	hboom	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers	-No	special equip	deploy personnel	tending personnel	SO
2-424.1	2000			22# danforths w. 1/2" chain		2				6	2 7	
2-424.2	2000	0		22# danforths w. 1/2" chain	0	2	0	0		6	6	
2-424.3	4500	0		22# danforths w. 1/2" chain	0	3	1	0		9	8	

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)

From the Richmond-San Rafael Bridge, take Highway 101 south and exit at Paradise Drive. Proceed to Paradise Beach County Park.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)

Paved surface to Paradise Cove County Park. Foot traffic only beyond

WATER LOGISTICS:

Access limitations: depth, obstructions: Shallow water

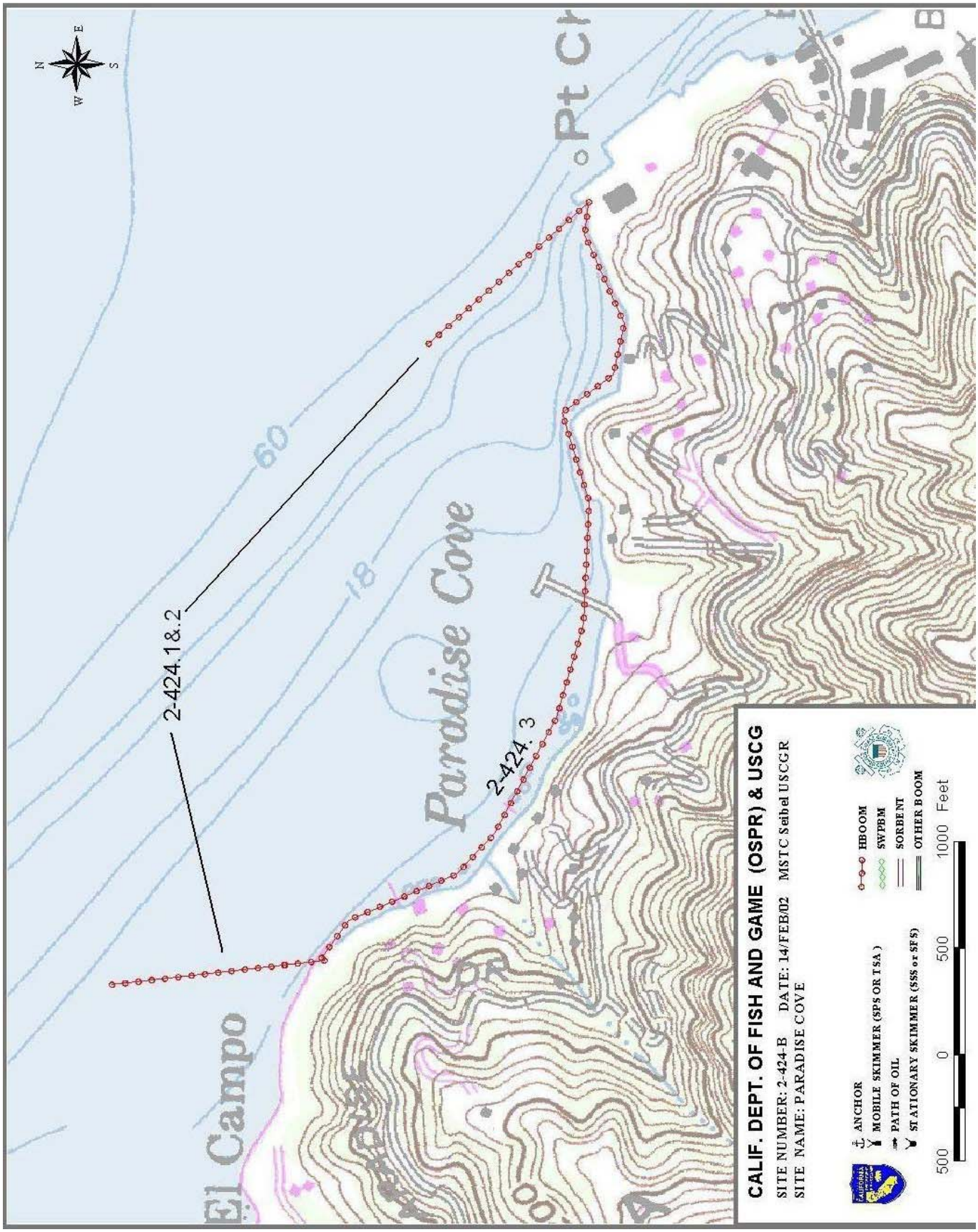
Boat Launching, Loading, Docking and Services Available: Services at Sausalito and Richmond

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:

The county park may be used as a staging area and the cement pier may be used as an anchor point.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


N
E
S
W
2-424.1&.2
2-424.3
60
18
Paradise Cove
Pt Ch
El Campo
CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-424-B DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: PARADISE COVE
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
500
0
500
1000 Feet

This Page Intentionally Blank

2-425–A Corte Madera Marshes - Site Summary 2-425 - A

County: Marin **GRP:** 4 **Latitude** 38 56 N **Longitude** 122 30 W
USGS: San Quentin **OSPR Map:** **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
The site includes the marshes and mudflats from south of Corte Madera Channel to Paradise Cay Yacht Harbor and the marshes up Corte Madera Creek. The site is a very shallow embayment with a prograding shoreline and an emergent marsh at the back bay. Historically the high marsh had been diked. Those diked marshes are now open to tidal exchange, and the north half is the Corte Madera State Ecological Reserve owned and controlled by the Calif Dept of Fish and Game, Region III. The mudflats in front are very shallow, and there is rarely any significant wave action here. Special Status Species are found here and the site is heavily used by bird species and migratory bird species during the winter.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
Marshes have A-priority at all times. There are Special Status Species present year-round. There is heavy migratory bird use in winter and harbor seal pupping in late spring.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
There are a number of habitats at risk. These include the prograding shore with emergent marsh, the partially diked pickleweed saltmarsh, the shallow mudflats, the back marshes in the upstream portions of Corte Madera Creek, and some patches of eelgrass near Paradise Cay Harbor.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
The marsh and mudflats are heavily used by migratory shorebirds and waterfowl during fall and winter. The marshes are year-round habitat for marsh birds including the endangered California clapper rail.
The endangered saltmarsh harvest mouse is also found here. Harbor seals pup here in late spring and haul out on higher tides.
The rich infauna found here are forage species for both birds and shorebirds.
There are also rare plants thriving here, including Marin knotweed and northcoast soft bird's beak.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
	Sarah Allen	Pt. Reyes National Seashore	(415) 464-5187	(415) 464-5182
	Mike Josselyn	National Marine Fisheries Service, Tiburon	(415) 454-8868	
	Barbra Salzman	Marin Audubon Society	(415) 924-6057	(415) 927-3533
	Jim Swanson			

2-425-A Corte Madera Marshes - Site Strategy

County: Marin **NOAA CHART:** 18649 Entrance to SF Bay

Latitude	Longitude
38 56 N	122 30 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
The site includes the marshes and mudflats from south of Corte Madera Channel to Paradise Cay Yacht Harbor and the marshes up Corte Madera Creek.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
There are shallows and obstructions throughout the bay. Local knowledge is important for navigation here.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
The marshes are very sensitive, have sensitive plants and animals, and are almost impossible to clean or rehabilitate. There are additional marshes up Corte Madera Creek. The strategy is to exclude oil from being carried into the back marsh by closing small tidal inlets and excluding oil from the entire site by cascading boom across the entire marsh front landward of the currents and eddies.

SITE STRATEGIES

Strategy 2-425.1

(USCG Strategic Objective: **5**) **Dates:** **SISRS** **Approved** 05/17/1999 **last tested** **ACP date** 01/01/2000

Objective or Prevention Condition

Exclude oil from entering tidal inlets and cove mouth and creek.

Technique Details

Currents are aggressive across the mouth of the cove but not just back from the mouth. To take advantage of this current pattern, boom (8000' 9X9+ in 1000' or smaller lengths) from San Quentin (a point .25 miles south of San Rafael Bridge) direct south to a point .5 miles north of Paradise Cay. Boom may be continuous or keep cascades close together to maintain exclusion (leave trailing ends and tie together or close gaps with boom and sorbent). In the Corte Madera Channel, cascade boom to leave a passage though the boom for boat traffic (ferry traffic). At the marsh front, place boom across the eight tidal sloughs at the margin of the emergent marsh using short lengths of swamp boom (100' 4X4+ Hboom) backed with sorbent and staked in place.

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers	-No	special equip	deploy personnel	tending personnel	SO
2-425.1	8200	600		16/22+/danforths & chain + stakes	600	6	1	0	Bboats very shallows &	20	18 + 2 shore support2	5

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
By water the site is just south of Pt. San Quentin and may be accessible via Corte Madera Channel. Nearest land access is from Paradise Drive and Antilles Way (to Paradise Cay Harbor) on the south side, and on Pt.San Quentin Francisco Road (first exit off I-580 west of San Rafael Bridge).

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
Roadways are paved

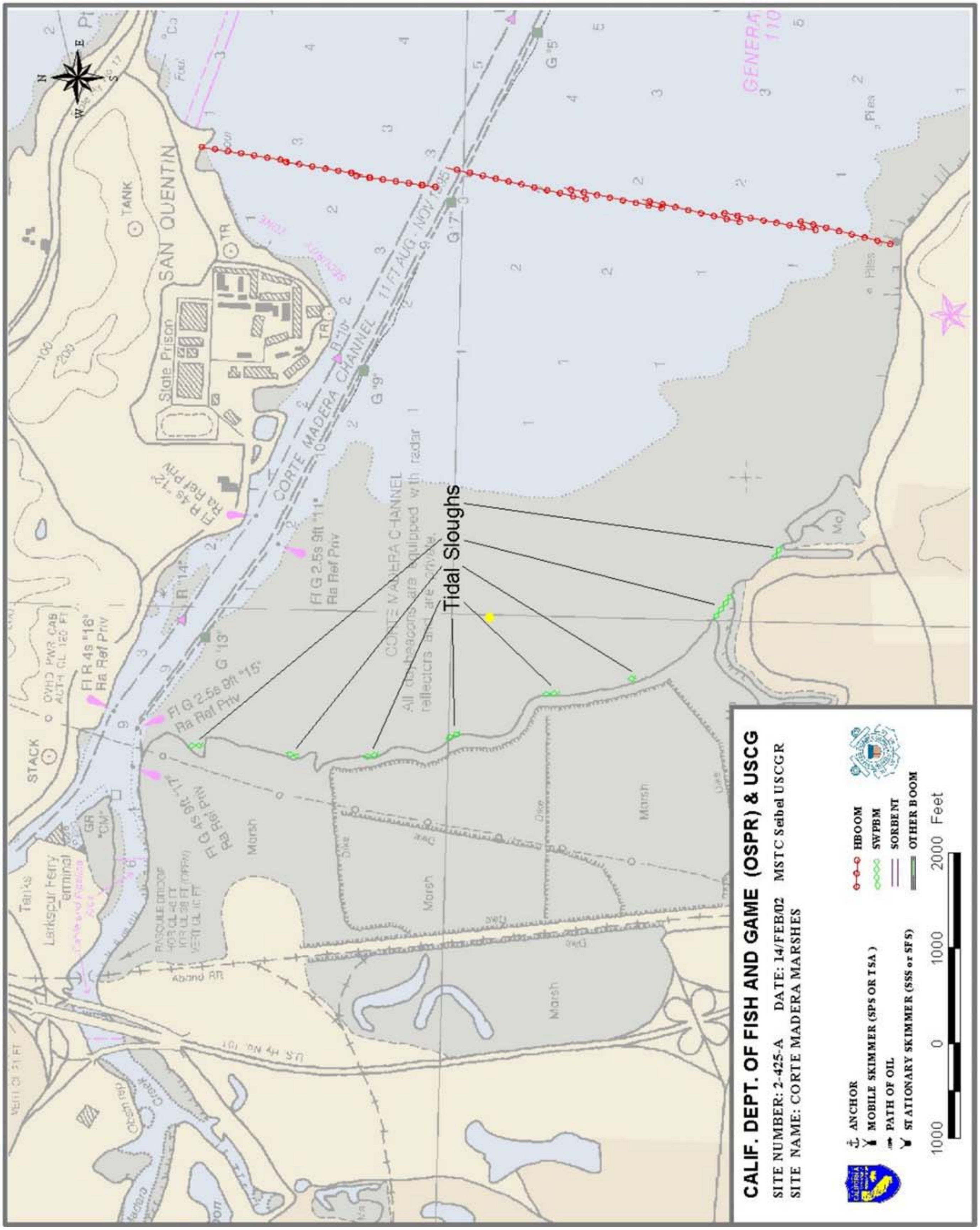
WATER LOGISTICS:

Access limitations: depth, obstructions:	exceedingly shallow - only very shallow draft boats
Boat Launching, Loading, Docking and Services Available:	Nearest launching is NOAA ramp on Tiburon Peninsula. Moorage and fuel at Paradise Cay. Also launching at Loch Marina, San Rafael.

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
Best staging at NOAA-NFMS Marin center or Paradise Cay Harbor. Also possible staging at Paradise Cove Park. Facilities are available in Corte Madera, Sausilito, and San Rafael. Zone staging at Richmond.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


Tidal Sloughs
SAN QUENTIN
State Prison
CORTE MADERA CHANNEL
Marsh
CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-425-A DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: CORTE MADERA MARSHES
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
1000 0 1000 2000 Feet

This Page Intentionally Blank

2-426 -A San Rafael Creek Marsh - Site Summary 2-426 -A

County: Marin **GRP:** 4 **Latitude** 37 58 **N** **Longitude** 122 29
USGS: 7.5" Quad: San Quentin **OSPR Map:** **Last ACP Update** 01/01/1994

SITE DESCRIPTION: **(general characterization of site - geomorphology, habitat, exposure, currents)**
This site is San Rafael Creek and the bay margins and mudflats for 1 mile north and south of the channel mouth. The navigation channel connecting San Rafael Marina with San Francisco Bay passes through mud flats and marshes extending about one half mile on each side.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
This is an "A" priority all year.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
There are marshes, mudflats, and other habitats present which are habitat for a wide variety of species. The entire area is largely sheltered. The adjacent mudflats are heavily used by migratory shorebirds during the fall and winter.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
The area is heavily used by migratory shorebirds during the fall and winter. California clapper rail inhabits this marsh. The saltmarsh harvest mouse is also found here.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
B	Dr Peter Baye	USFWS Ecological Services	(707) 562-3003	
B	Dr. J. T. Harvey	Moss Landing Marine Laboratory	(831) 755-8650	
BL	Mike Josselyn	National Marine Fisheries Service, Tiburon	(415) 454-8868	
B	Barbra Salzman	Marin Audubon Society	(415) 924-6057	(415) 927-3533

2-426-A San Rafael Creek Marsh - Site Strategy 2-426-A

County: Marin **NOAA CHART:** 18649 Entrance to SF Bay

Latitude 37 58 N Longitude 122 29 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
This site is San Rafael Creek and the bay margins and mudflats for 1 mile north and south of the channel mouth.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
Very shallow mud flats out side of channels

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
Shoreline type impacted would be extensive mud flats and marshes on either side of the yacht harbor. The San Rafael Creek Channel leads into a marina and additional sensitive areas. The intent is to prevent oil from entering the creek and to protect the marshes from oil. Avoid disturbing marsh vegetation or trampling oil into muds.

SITE STRATEGIES

Strategy 2-426.1

(USCG Strategic Objective: **7**) **Dates:** SISRS Approved last tested ACP date 07/01/1994

Objective or Prevention Condition

Deflect oil away by deflection boom off of Pt. San Pedro and Pt. San Quentin.

Technique Details

Deploy of 1,000 ft of harbor boom off of Pt. San Pedro and 2,000 ft off of Pt. San Quentin to deflect oil away from the entire area (not shown in strategy diagram). A skimmer could be positioned at the end of a deflection boom.

Strategy 2-426.2

(USCG Strategic Objective: **5,8**) **Dates:** SISRS Approved last tested ACP date 07/01/1994

Objective or Prevention Condition

Exclusion from San Rafael Creek and local harbors

Technique Details

Exclude oil with harbor boom (1,000 ft) to close off San Rafael Creek Channel mouth and the yacht harbor entrance. Leave a cascaded chevron opening in the channel mouths to allow vessel passage but still exclude oil.

If heavy oil threat is theatening, contact IC for deployment of on-water recovery should be conducted with a skimmer (weir) near the mouth of the creek and in front of the mud flats north of the yacht harbor.

Strategy 2-426.3

(USCG Strategic Objective: **8**) **Dates:** SISRS Approved last tested ACP date 07/01/1994

Objective or Prevention Condition

Shoreline protection when marshy margins are threatened by severe oiling - north and south of creek mouth.

Technique Details

If deflection is ineffective (see .1), then a total of 6,900 ft of harbor boom (2500 south of the channel the remainder to the north) is to be used to protect the mudflats and marsh front. Use tidal barrier boom or sorbent boom (Appox. 600 ft) connecting the harbor boom

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers -No	special equip	deploy personnel	tending personnel		SO
2-426.1	3000			7/ 22+/ danforths, & 15' 1/2 chain.		3	2	Shallow draft boom boats.	11	2-4		7
2-426.2	1000			8/22+/danforths & stakes		1	1	Very Shallow draft boom boats.	5	2	5,8	
2-426.3	6900		600TBB	8/22+/danforths & stakes		3	2	Very Shallow draft boom boats.	12	10 boat crew +2	2X /day check	8

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
From the Richmond-San Rafael Bridge, take Highway 101 north to the San Rafael Marina. Also, Loch Lomond Marina may be used as staging and deployment area: Exit Hwy 101 at 3rd St. and proceed east. 3rd becomes Pt San Pedro Rd.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
some portions only foot; paved roads

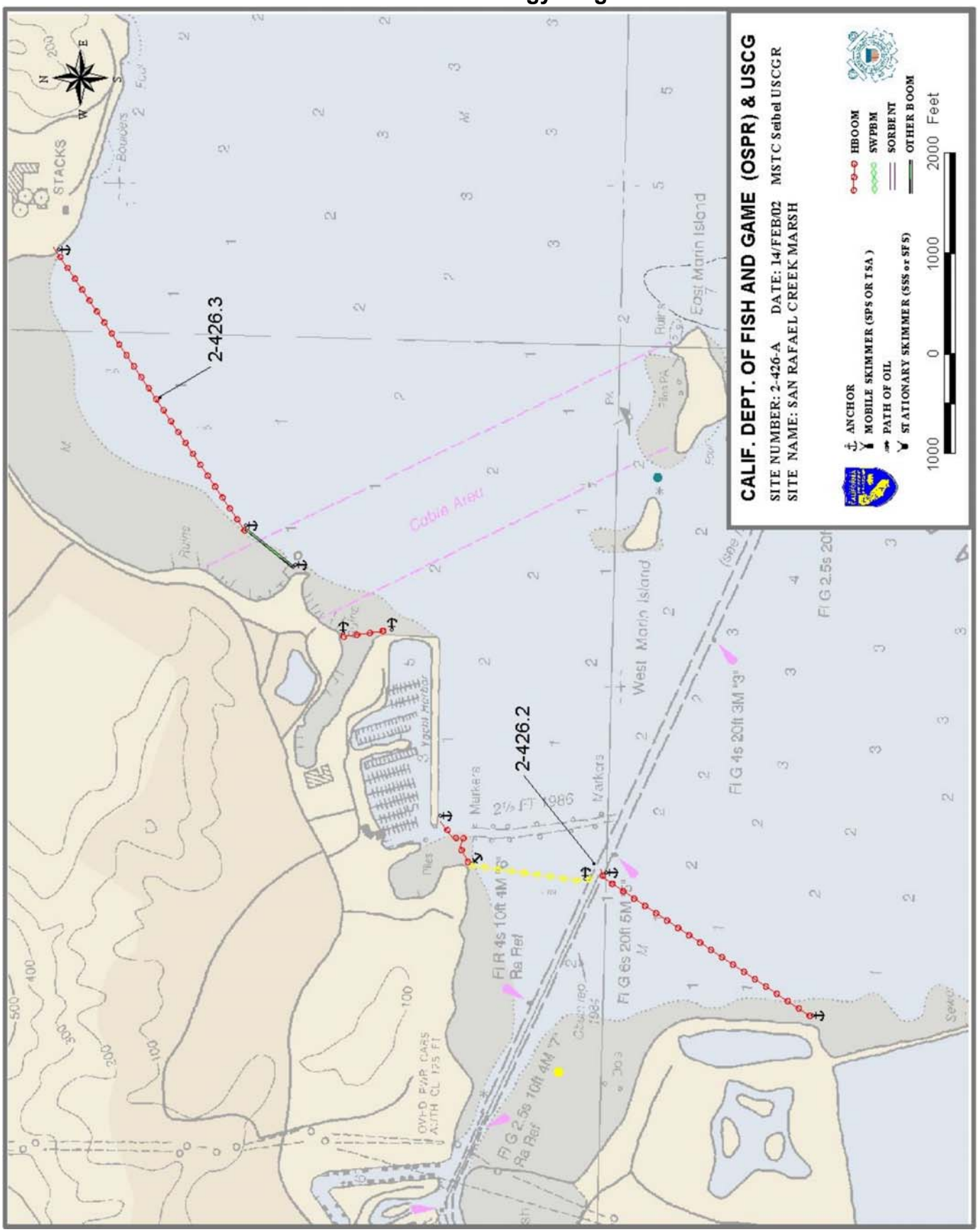
WATER LOGISTICS:
Access limitations: depth, obstructions: extremely shallow water out of channels
Boat Launching, Loading, Docking and Services Available: launching, fuel, moorage at Loch Lomond Marina. More services up San Rafael Creek

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
All manner of facilities in San Rafael Creek marinas. Staging at Loch Lomond Marina. The San Rafael Rock Quarry can be used for a helicopter pad.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS

2-426 - A San Rafael Creek Marsh - Site Strategy Diagram 2-426-A



This Page Intentionally Blank

2-427-A Marin Islands - Site Summary 2-427 - A

County: Marin **GRP:** 4 **Latitude** 37 58 **N** **Longitude** 122 28
USGS: San Quentin **OSPR Map:** 150 **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
This site includes both of Marine Islands and the surrounding waters of San Rafael Bay. This site is one of the most ecologically important and sensitive sites in the San Francisco Bay. These islands support one of the largest heron rookeries in northern California. It is the rookery for the herons and egrets of San Francisco Bay. Each island is less than one quarter mile in diameter and covered with trees. The Ciconiformes nest here, fledge their offspring, and roost in the evenings. The islands rise steeply and are cliffy. The surrounding shores are gravel, cobble, and boulder. The islands are owned by the US Fish and Wildlife Service and maintained as a wildlife preserve. The narrow channel is located south of the islands, provides access to San Rafael / San Rafael Creek boat traffic.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
The site is an "A" priority throughout the year due to the singular use of this site by herons in the S.F. Bay area.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
These islands support one of the largest heron rookeries in northern California. The habitat risk is linked to this breeding - roosting habitat for herons and other birds. Although there are many ecological values to shore lines, the rocky, gravely shoreline here is of greatest concern as rearing habitat for fledglings.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
This is the nesting and roosting site for great egret, black crowned night heron, great blue heron and snowy egrets in the SF Bay area. Black oystercatchers, western gull, mallard ducks and Canada geese have also nested here.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
B	Barbra Salzman	Marin Audubon Society	(415) 924-6057	(415) 927-3533
BT	Jean Takakawa	S F Bay National Wildlife Refuge		
TB	John Takekawa		(707) 557-9880	

2-427-A Marin Islands - Site Strategy

County: Marin **NOAA CHART:** 18649 Entrance to SF Bay

Latitude 37 58 N Longitude 122 28 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site

This site includes both of Marine Islands and the surrounding waters of San Rafael Bay.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site

This is a shallow water site. There are submerged rocks.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)

This site is one of the most ecologically important and sensitive sites in the San Francisco Bay. These islands support one of the largest heron rookeries in northern California. Although oil can't reach the nest sites, the disturbance of protection and cleanup could be devastating. For this reason, deploy strategy with as little disturbance and noise as practical and do not get on the islands without explicit instructions from ICS and accompanying USFWS staff.

SITE STRATEGIES

Strategy 2-427.1

(USCG Strategic Objective: **7**) **Dates:** SISRS Approved 05/17/1999 last tested ACP date 01/01/2000

Objective or Prevention Condition

Deflect oil past islands with chevron at east end.

Technique Details

Deploy a deflection chevron close to the east tip of East Marin Island: 3000' 9X9+ Harbor boom (curtain boom). Deploy as close to east tip as practical. Anchor with suitable anchors for wind and wave conditions.

Strategy 2-427.2

(USCG Strategic Objective: **5**) **Dates:** SISRS Approved 05/17/1999 last tested ACP date 01/01/2000

Objective or Prevention Condition

protective enclosure booming of both islands in the event of heavy oil threat.

Technique Details

Wrap both islands completely by linking to existing chevron (see 2-427.1) Secure boom to chevron legs at least 100' back from tips and surround islands (4000' 9X9+).

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers -No	special equip	deploy personnel	tending personnel		SO
2-427.1	3000			7/22+/danforths + chain.		3	0		9	9	7	
2-427.2	4000			7/22+/danforths + chain		4	0		12	12	5	

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)

There is no land access to this site: water access only. The islands are northwest from the San Rafael Bridge. The islands are just north of the channel from the San Rafael Creek and about one half mile offshore of the Marin Peninsula.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)

Site only accessible from boat.

WATER LOGISTICS:

Access limitations: depth, obstructions: Mud flats, rocks and shallow water surround these islands.

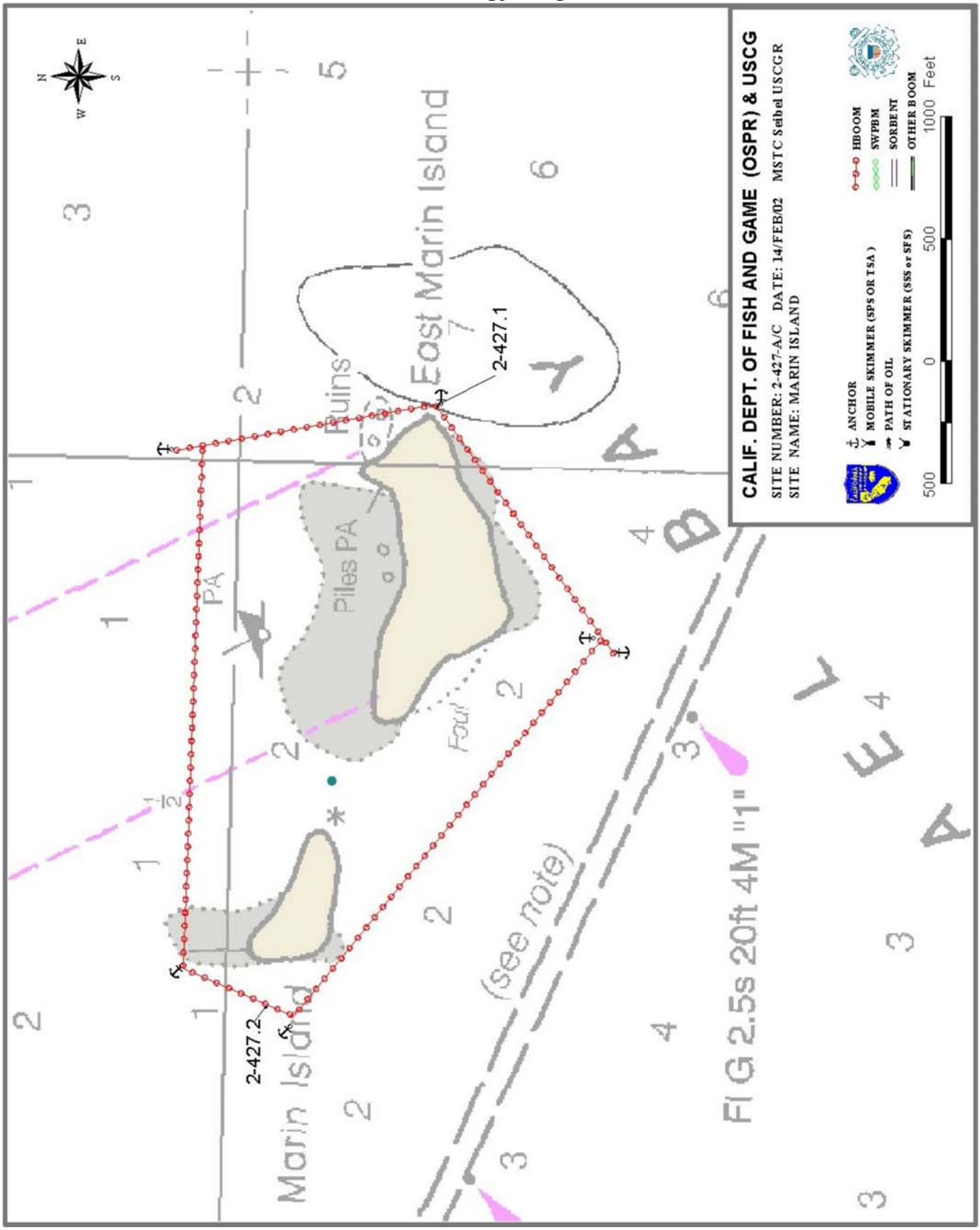
Boat Launching, Loading, Docking and Services Available: Nearest launch is Loch Lomond Marina at 110 Loch Lomond Drive. Numerous marinas & facilities etc. are located in San Rafael.

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:

The staging site will depend on the spill scenario. Numerous marinas can be used as staging areas and boat launch sites is San Rafael. The Richmond Marina / Santa Fe Channel is a major staging and field post site.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-427-A/C DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: MARIN ISLAND
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
500 0 500 1000 Feet
East Marin Island
Ruins
Piles PA
PA
2-427.1
2-427.2
Marin Island
(see note)
Fl G 2.5s 20ft 4M "1"

This Page Intentionally Blank

2-451-A Castro Rocks - Site Summary 2-451 - A

County: Contra Costa **GRP:** 4 **Latitude** 37 50 **N** **Longitude** 122 24
USGS: San Quentin **OSPR Map:** **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
Castro Rocks is a small group of rock islands located near the east end of the Richmond-San Rafael Bridge, and just north of the Chevron Long Wharf. Their exposure is variable with the tide annual tidal cycle. During higher tides and rough conditions, the islands are exposed to aggressive wave action. This is a harbor seal rookery during the spring when the tide is less than 3 feet above mean lower low water: 30 to 60 seals use the site. 100 to 250 seals haul out at this site during the winter.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
This is an "A" priority during the harbor seal breeding season from 15 March to 10 June and a B priority for the remainder of the year.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
This rocky exposure has intertidal biota but the prime habitat sensitivity at this site is related to harbor seal and bird use.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
This is a site which is used heavily by birds, including pelicans and cormorants, for loafing.
This is a harbor seal rookery during the spring when 30 to 60 seals use the site during the period when the tide is less than 3 feet above mean lower low water. 100 to 250 seals haul out at this site during the winter.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
	Sarah Allen	Pt. Reyes National Seashore	(415) 464-5187	(415) 464-5182
	Chevron Control Room	Chevron-Operations Control Room (24hrs.)	(510) 242-4494	
	Diane Kopec			

2-451-A Castro Rocks - Site Strategy

County: Contra Costa **NOAA CHART:** 18649 Entrance to SF Bay

Latitude Longitude
37 50 N 122 24 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site

Castro Rocks is a small group of rock islands located near the east end of the Richmond-San Rafael Bridge, and just north of the Chevron Long Wharf.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site

There are submerged rocks near Castro Rocks.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)

The concern is that these rocks will be come oiled and, in turn, will oil the harbor seals and birds which use them. This is particularly a problem in the spring when harbor seals pup here. During that time, responders must make every effort stay as clear as possible of the islands to minimize disturbance of adults and their pups.

SITE STRATEGIES

Strategy 2-451.1

(USCG Strategic Objective: **7**) **Dates:** SISRS 05/17/1999 Approved last tested 08/01/1997 ACP date 01/01/2000

Objective or Prevention Condition

Deflection of oil threat from west or south west - deploy protection legs 1 and 2

Technique Details

Deploy deflection boom in a wide angle wedge configuration on the west side of the rocks (legs 1 & 2 of a protective diamond around the rocks). This strategy will protect the site from both directions of tidal flow. Set the boom on the 40 ft depth contour where anchors will require 250' of scope. Use rock anchors on the west side of Castro Rocks and mud anchors to the north, south and east of the rocks. Use bridge piers to anchor boom ends. If waves are washing oil over the boom, deploy a second layer of 4X4+(2500') inside of the over-washing leg and arrange for absorption (300' of sorbents and snare).

Strategy 2-451.2

(USCG Strategic Objective: **7**) **Dates:** SISRS 05/17/1999 Approved last tested 08/01/1997 ACP date 01/01/2000

Objective or Prevention Condition

Deflection/protection for south and east side oil threats - deploy protection legs 1 and 3 first, then 2 and 4 before the ebb

Technique Details

Deploy protection legs 1 and 3 first, then complete legs 2 and 4 before the ebb tide starts:

a) Deploy the south legs of the chevron first (legs 1 & 3 of the deflection diamond) using 6000' 9X9+ hboom. Leg 1 should be deployed along the 40' contour using northill anchors plus chain and with 250' of scope. Use rock anchors on the west side of Castro Rocks and mud anchors to the north, south and east of the rocks. Use bridge piers to anchor boom ends,

b) Next, deploy the north side chevron by attaching to bridge piers (3000' 9X9+ Hboom).

c) If waves are washing oil over the boom, deploy a second layer of 4X4+(2500') inside of the over-washing leg and arrange for absorption (300' of sorbents and snare).

Strategy 2-451.3

(USCG Strategic Objective: **5**) **Dates:** SISRS 05/17/1999 Approved last tested 08/01/1997 ACP date 01/01/2000

Objective or Prevention Condition

Deflection for north side oil threats deploy - protection legs 2 and 4

Technique Details

Complete a north-side chevron to deflect oil past site by deploying protection legs 2 and 4 as follows:

a) Leg 2: Deploy 1000 ft of deflection boom from the bridge pier to the north. The north end of leg 2 should be a little west of center of rocks. Then deploy 500 ft from the bridge pier to terminate west of the rocks on the 40 ft depth contour,

b) Leg 4 - deploy 1500' 9X9+ Hboom from the north end of leg 2 to the east side of Castro Rocks,

c) Anchoring: Use rock anchors on the west side of Castro Rocks and mud anchors to the north, south and east of the rocks. Anchors will require 250' of scope.

d) If waves are washing oil over the boom, deploy a second layer of 4X4+(2500') inside of the over-washing leg and arrange for absorption (300' of sorbents and snare).

Strategy 2-451.4

(USCG Strategic Objective: **5**) **Dates:** SISRS 05/17/1999 Approved last tested 08/01/1997 ACP date 01/01/2000

Objective or Prevention Condition

Confine/deflect oil to shore for collection after completion of protection strategy

Technique Details **Check here means (X) " No strategy diagram"**

If the source of the spill is between the rocks and shore, divert oil to shoreline for confinement and collection after excuting : from boom already deployed to protect easterly exposure of the rocks, deploy 2300 feet of 9X9+ boom to the sandy pocket beach near the bridge which can be used as an oil recovery area. Beware of submerged debris of the beach; rip rap is on either side as well. (strategy not shown in diagram.) Anchoring will require chain and scope to keep boom from moving.

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers -No	special equip	deploy personnel	tending personnel	SO
2-451.1	3000	2500		5/40+/northhill, & 7/22+/Danforth	300	3	0	maneuverable Bboats & 1500' line	11	9 + 2 shore support	2
2-451.2	7000	2500		5/40+/northhill, & 13/22+/Danforth	300	3	1	maneuverable Bboats & 1500' line	11	9 + 2 shore support	2
2-451.3	3000	2500		5/40+/northhill, & 10/22+/Danforth		3	1	maneuverable Bboats & 1500' line	11	9 +2 shore support	2
2-451.4	2300			22#+ daforth with heavy chain		3	1		11	9 + 2 shore support	5

2-451.1	3000	2500		5/40+/northhill, & 7/22+/Danforth	300	3	0	maneuverable Bboats & 1500' line	11	9 + 2 shore support	7
2-451.2	7000	2500		5/40+/northhill, & 13/22+/Danforth	300	3	1	maneuverable Bboats & 1500' line	11	9 + 2 shore support	7
2-451.3	3000	2500		5/40+/northhill, & 10/22+/Danforth		3	1	maneuverable Bboats & 1500' line	11	9 +2 shore support	5
2-451.4	2300			22#+ daforth with heavy chain		3	1		11	9 + 2 shore support	5

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)

Access is by boat only to this small group of rock islands located near the east end of the Richmond-San Rafael Bridge. The nearest launching sites are Richmond Harbor and Tiburon Center for Environmental Studies in Marin County. The site is visible from the platform on pier 55 or from the lower deck of the Richmond-San Rafael Bridge (Call Cal Trans Towing Service).

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
Accessible only by boat

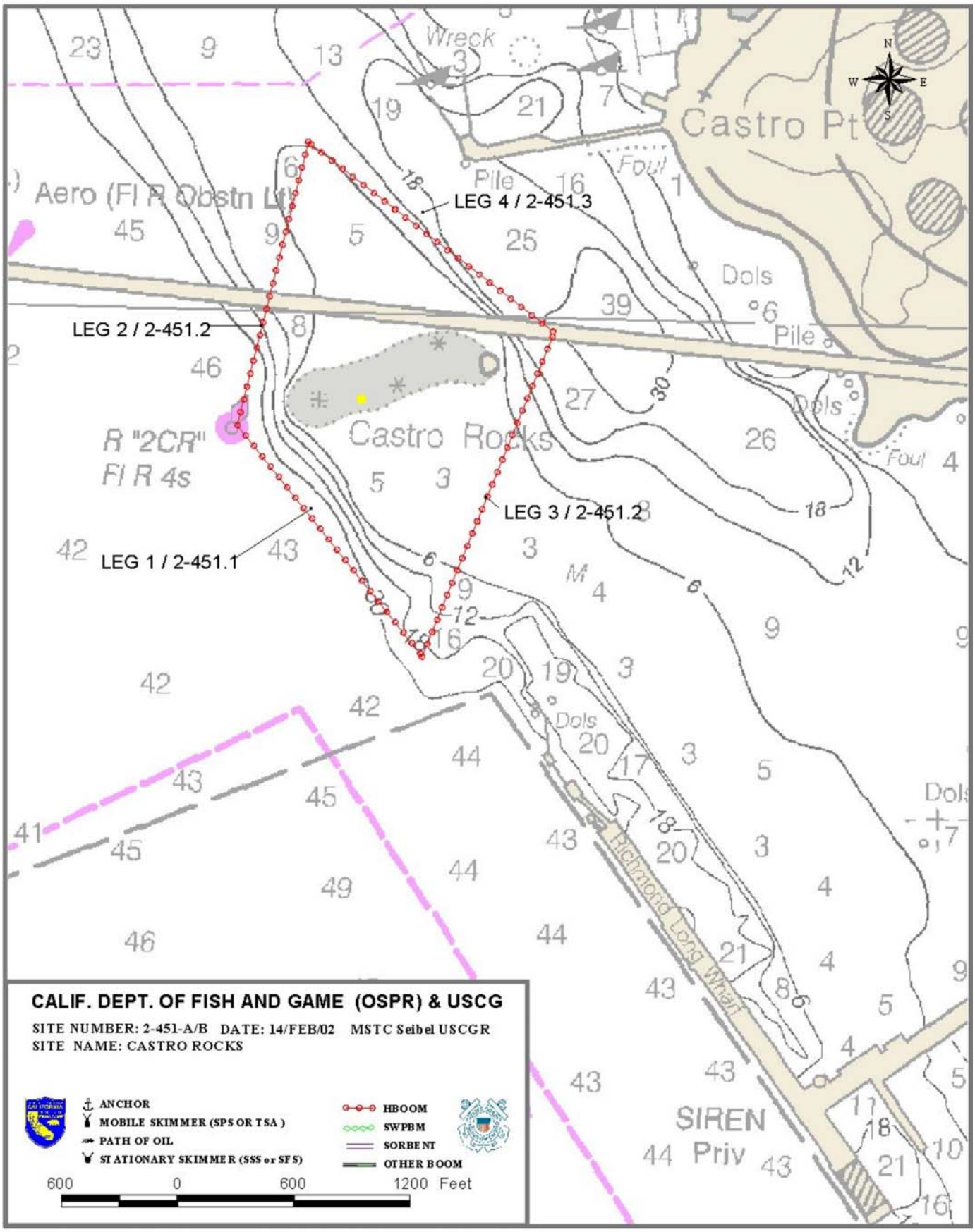
WATER LOGISTICS:

Access limitations: depth, obstructions:	There are submerged rocks around this site
Boat Launching, Loading, Docking and Services Available:	The nearest launching sites are Richmond Harbor and Tiburon Center for Environmental Studies in Marin County.

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
Nearest staging, facilities, and field outposts are at Richmond Marina and Santa Fe Channel.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS
Bottom type: west corner of rocks is hard bottom. Inside channel is soft mud.


LEG 4 / 2-451.3
LEG 2 / 2-451.2
LEG 3 / 2-451.2
LEG 1 / 2-451.1
Castro Pt
Castro Rocks
R "2CR"
Fl R 4s
Aero (Fl R Obstn Lt)
Wreck
Pile
Foul
Dols
Richmond Long Wharf
SIREN
Priv
CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-451-A/B DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: CASTRO ROCKS
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
600 0 600 1200 Feet

2-452-A Richmond Eelgrass Beds - Site Summary 2-452-A

County: Contra Costa **GRP:** 4 **Latitude** 37 58 N **Longitude** 122 24 W
USGS: San Quentin **OSPR Map:** 150 **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
This site includes all shallow (<10 feet), soft bottom, areas along the east shore of San Francisco Bay from Pt. San Pablo south along the Richmond Peninsula to Pt. Richmond. The Richmond - San Rafael Bridge (highway 580) bisects the site. Extensive eelgrass beds are present in shallow (<10 feet) nearshore areas from Pt. San Pablo south along the Richmond Peninsula to Pt. Richmond. Six rocky headlands separate five beaches along this shoreline. The beaches south of Point Molate are of fine grained sand while those to the north are of coarse sand to pebbles and shell. Numerous pilings and pier structures exist and should be used as anchoring points for the boom.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
The eelgrass beds are most vulnerable at low tide. Waterfowl are most abundant from early fall through early spring.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
This is an "A" priority all year. The eelgrass beds are most vulnerable to oil during the growing season of spring and summer when the leaves lay
on the surface, especially at low tide. Eelgrass beds are an extremely valuable habitat in San Francisco Bay for spawning of herring in the winter, food for waterfowl in spring, and as nursery areas to fish and invertebrates throughout summer and fall.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
Various species of waterfowl can be found at this site in the spring time.
Herring have a history of spawning at this site in the winter time.
There are extensive eelgrass beds in each of the coves. Some of the beds are so shallow that some plants are totally exposed during some low tides.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Ohlone cultural sites may be nearby, and there are historical buildings on the former Point Molate U S Naval Fuel Depot. The entire shoreline was intensively used at one time or another, and a Chinese fishing village was one of the uses.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
EL	US Navy - Pt. Molate Naval Fuel Depot		(510) 231-7901	
EL	Chevron Control Room	Chevron-Operations Control Room (24hrs.)	(510) 242-4494	
C	Leigh Jordan	Northwest Information Center	(707) 664-0880	(707) 664-0890
BT	Diane Watters	Calif Dept of Fish and Game	(650) 688-6357	
EL	Tom Wilson	Port of Richmond, City of Richmond	(510) 215-4605	(510) 233-3105

2-452-A Richmond Eelgrass Beds - Site Strategy 2-452-A

Latitude Longitude

County: Contra Costa **NOAA CHART:** Entrance to San Francisco Bay 18649 37 58 N 122 24 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
This site includes all shallow (<10 feet), soft bottom, areas along the east shore of San Francisco Bay from Pt. San Pablo south along the Richmond Peninsula to Pt. Richmond. The Richmond - San Rafael Bridge (highway 580) bisects the site.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
Hazards include shallow water with debris and pilings throughout the area, also piers and vessel traffic near Chevron Long Wharf and Paktank facilities. Areas near Pt. Molate and Castro Pt. are inside a restricted area. Permission to enter must be obtained from the US Navy and possibly from Chevron.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
Should eelgrass become heavily oiled it may produce a sheen for several weeks unless removed. Surface oil can be expected to produce injury and death to waterfowl in area.

SITE STRATEGIES

Strategy 2-452.1

(USCG Strategic Objective: **5**) **Dates:** SISRS Approved 01/31/1994 last tested ACP date 01/01/1995

Objective or Prevention Condition

Exclude oil from pocket marsh at Castro Pt.

Technique Details

Exclude oil from small pocket marsh just north of Castro Pt using 400' of swamp boom anchored or staked to high beach. There is land access but boom delivery via land is difficult. Water delivery is recommended but must contend with submerged obstructions

Strategy 2-452.2

(USCG Strategic Objective: **8**) **Dates:** SISRS Approved 01/31/1994 last tested ACP date 01/01/1995

Objective or Prevention Condition

Protect eelgrass bed in cove between Molate Pt and Pt Orient.

Technique Details

Deploy 2300 feet of harbor boom at an angle that will deflect oil away from the eelgrass bed.

Strategy 2-452.3

(USCG Strategic Objective: **6**) **Dates:** SISRS Approved 01/31/1994 last tested ACP date 01/01/2000

Objective or Prevention Condition

Collection/confinement for large losses of oil at or near this site

Technique Details

For large losses of oil at or near this site, attempt to collect it at the shoreline by deploying boom from headlands where there is access for oil recovery equipment. Suggestions for collection on the flood tide include: deploy 1,400 feet of boom (4 to 12 inch freeboard depending upon expected wind and current) between Castro Point and the Richmond-San Rafael Bridge near Castro Rocks. Collect and recover the oil at Castro Point. Deploy 2,000 feet of boom in a southwesterly direction from Point Molate to collect and recover oil at Pt. Molate. Deploy 1000 feet of boom from Point Orient.

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers -No	special equip	deploy personnel	tending personnel		SO
2-452.1	0	400		stakes or anchors		0	1		2	2	5	
2-452.2	2100			22# = chain		2	1		6		8	
2-452.3	5000			50 20# w/ 10' 1" chain		8	4	2,500' 1/2" anchor line	20	20	yes	6

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
Primary access by vessel. By land take Hwy 80 to Hwy 580 west. Before toll booth of the Richmond-San Rafael bridge turn right onto Western Drive. Proceed to beach areas. To access from Hwy 580 eastbound take Cutting Blvd to Garrard Blvd. South, through tunnel to Western Drive and shoreline.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
Good access for all vehicles along the main road (Western Drive).

WATER LOGISTICS:

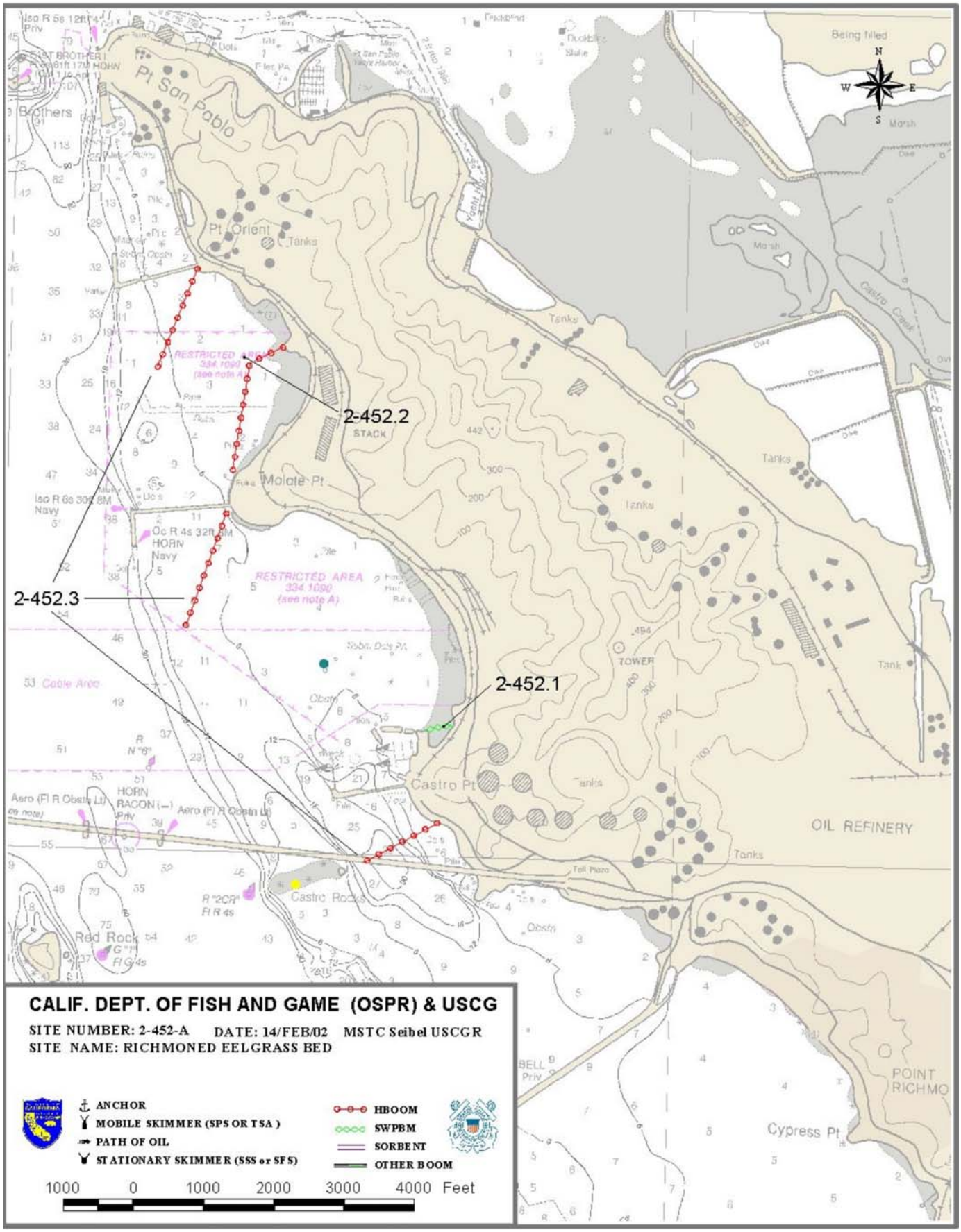
Access limitations: depth, obstructions: This is a shallow water site

Boat Launching, Loading, Docking and Services Available: Launch ramps are available in the Richmond Harbor and at Chevron Refinery, docking facilities are available at the Pt. San Pablo Yacht Harbor (located NW of Pt Orient) and Richmond Marina.

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
Numerous staging areas and locations for field posts exist along Western Drive, at the Chevron Long Wharf and in Richmond harbor and

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS
Location and size of eelgrass beds along the Richmond Peninsula is noted in a 1989 National Marine Fisheries Service Report.


Pt San Pablo
Pt Orient
Tanks
Being filled
Marsh
Castro Creek
2-452.2
STACK
Molate Pt
RESTRICTED AREA
334.1090
(see note A)
2-452.3
2-452.1
TOWER
Castro Pt
OIL REFINERY
Toll Plaza
Castro Rocks
Red Rock
POINT RICHMO
Cypress Pt
CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-452-A DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: RICHMONED EELGRASS BED
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
1000 0 1000 2000 3000 4000 Feet

This Page Intentionally Blank

2-453-A Brook's Island - Site Summary 2-453 -A

County: Contra Costa **GRP:** 4 **Latitude** 37 54' **N** **Longitude** 122 21.5'
USGS: Richmond **OSPR Map:** 151 **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
Brook's Island lies south of the Richmond Channel and at the west side of the Richmond Inner Harbor. This small' rocky island, 400 X 1,700 yards, consists of about 160 acres of rocky upland rising to a maximum elevation of 163 ft. Most shorelines of the island are mixed sand and gravel. A 2,300 yard long breakwater is attached to the west end of the island with a shipping channel along its north side. There is a small, 35 acre, seasonal wetland near where the breakwater connects to the island. The wetland is protected on the north by the breakwater and a sandy beach. Sand beaches and dunes have accumulated at several points along the breakwater. To the south the marsh is open to San Francisco Bay. There are tidal flats to the east and south of Brook's Island and the breakwater. Eelgrass beds are present in shallow water (less than 6 feet below MLLW) south of the breakwater. This island is owned by East Bay Regional Parks.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
"A" priority all year. The marsh is sensitive to oiling year-around, and the eelgrass beds are most sensitive to oil during the growing season of spring and summer when the leaves lay on the surface, especially at low tide.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
The wetland is sensitive year-around; the eelgrass beds are most sensitive to oil during he growing season of spring and summer when the leaves lay on the surface, especially at low tide. Harbor seals use the island as a haul-out site, and some birds are present throughout the year.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
Several species are of special interest; the Snowy Egret, Black-crowned Night Heron, and Caspian Tern inhabit the marsh and waters surrounding the island.
Harbor seals haul out on the island.
A rich community of invertebrates inhabit the sand and gravel beaches of the island and the tidal flats.
There is a 35 acre wetland on the island. The eelgrass beds are an extremely valuable habitat for spawning herring in the winter and as a nursary area for fish and invertebrates throughout the summer and fall. The eelgrass beds are an extremely valuable food source for waterfowl in the spring.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
	Port of Richmond		(510) 215-4600	
T	US Navy - Pt. Molate Naval Fuel Depot		(510) 231-7901	
C	Chevron Control Room	Chevron-Operations Control Room (24hrs.)	(510) 242-4494	
	Joseph Didonato	East Bay Regional Park District	(510) 635-0135	
	Dispatch EBRP	East Bay Regional Park District	(510) 792-0222	
	Office Marine Mammel Center	Marine Mammal Center	(415) 289-7325	
B	Dr. Naill McCarten	Botanical Research	(510) 841-8145	
	Tina Toriello	Chevron Research	(510) 242-4036	(510) 242-8573
C	Diane Watters	Calif Dept of Fish and Game	(650) 688-6357	
L	Tom Wilson	Port of Richmond, City of Richmond	(510) 215-4605	(510) 233-3105

2-453 -A Brook's Island - Site Strategy

Latitude Longitude

County: Contra Costa **NOAA CHART:** Entrance to San Francisco Bay 18649 37 54' N 122 21.5' W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
Brook's Island lies south of the Richmond Channel and at the west side of the Richmond Inner Harbor.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
Shallow water, eelgrass, debris, and pilings may be present throughout area south and east of island and breakwater. Notify East Bay Regional Park District before going ashore.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
Seabirds nest on the sandy spit tapering from the west tip of the island. There are also marshes interior to the beaches in that same spit. There is eelgrass in the very shallow waters near shore. The risk of oiling seabirds and eelgrass is high. Extensive shoreline cleanup operations would greatly disturb heavy bird use of the area. Do not go ashore without East Bay Regional Park assistance.

SITE STRATEGIES

Strategy 2-453.1 Objective: Protection Booming when oil threatens high marsh

ACP DATE 1/01/2002

On the west side of Brooks Island, deploy 2000 ft of Harbor boom across the cove at the northern corner between the spit and the main island mass. Boom should be anchored on shore, but foot traffic must be kept to absolute minimum to avoid disturbing ground nesting birds and marsh life. This area is extremely shallow, and probably only minimal mid-boom anchoring will be necessary.

Strategy 2-453.2 Objective: Deflect oil to grounding/collection at sandy beach at base of breakwater. Minimize the risk to eelgrass beds and birds through on- water recovery and the use of boom to concentrate and strand oil.

ACP DATE 1/1/2000

Deploy 4,000 to 8,000 feet of harbor boom extending from the sand spit on the south side of the breakwater at a 45 degree angle into the wind. The boom must be straight so oil does not collect anywhere along the boom but moves continuously until it reaches the downwind end of the boom. This will probably be most easily accomplished if the boom is deployed as eight or more 500 foot pieces cascaded and overlapping by as much as half the length of each piece to capture oil washing over the boom in high winds. There must be an anchor at each end of each piece and each anchor should have a crown buoy to facilitate later adjustment of the boom.

Table of Response Resources

strategy number	harbor boom	swamp boom	Other boom type	sorb boom	Anchoring no	Anchoring type and gear	Boom boat	Skiffs punts	Skimmers No	Skimmers Type	Special No	Special and Equipment kinds	staff deploy	Staff tend
2-453.1	2000	0	0	0	0		1	1	0		0	boom boat capable of withstanding grounding	3	
2-453.11	4000			200	16	16 20# w/10'chain & 30' line	3	1					10	

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
Access by vessel only. Launch at Richmond Marina. Island is managed by East Bay Regional Park District.

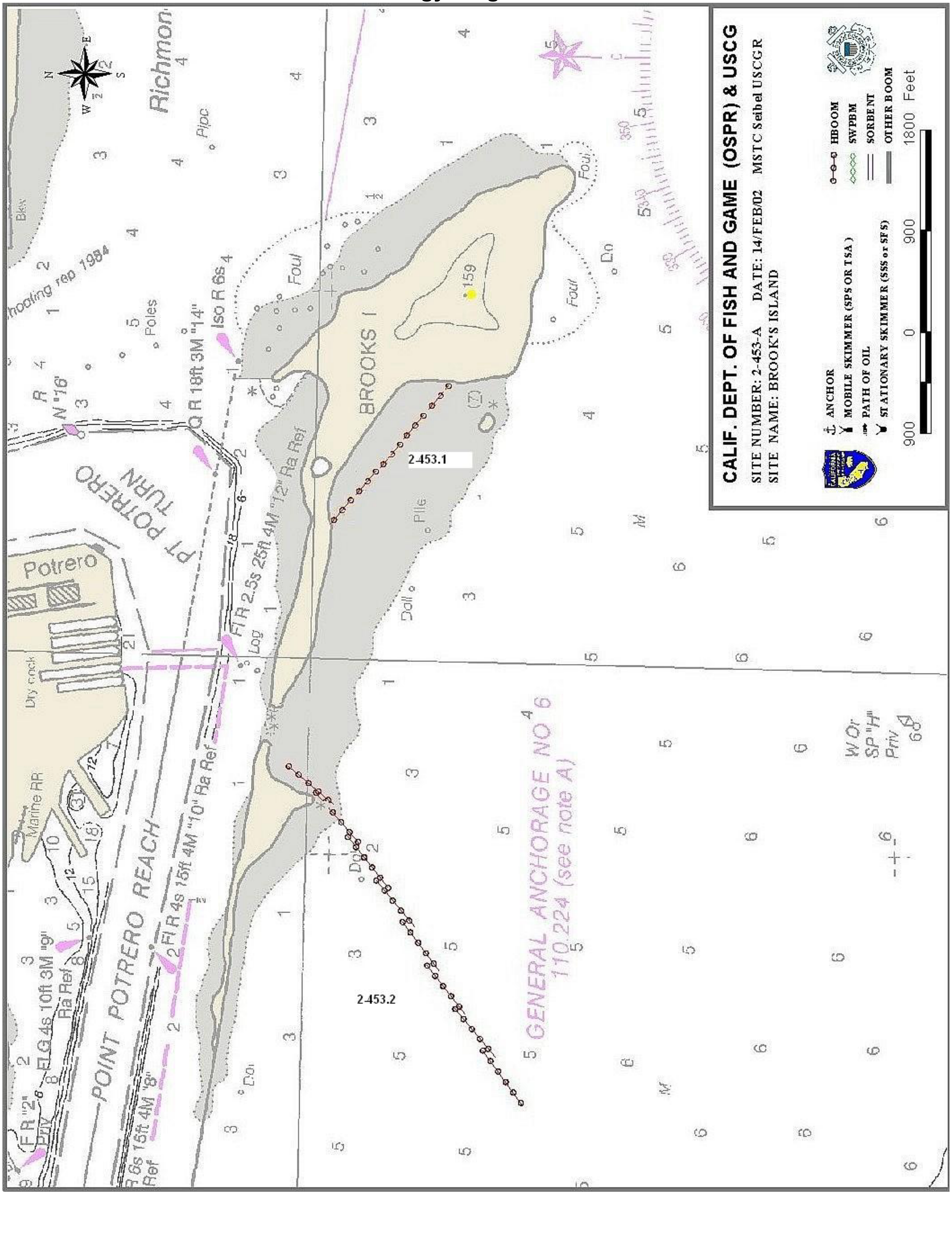
LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
none

WATER LOGISTICS:
Access limitations: depth, obstructions: Shallow water
Boat Launching, Loading, Docking and Services Available: Launch ramp at Richmond Marina

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
Large staging area available at MSRC in Richmond Harbor or at the Richmond Marina. Possible field posts at any of the several marine terminals along Santa Fe channel in Richmond Harbor.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-453-A DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: BROOK'S ISLAND
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
900 0 900 1800 Feet
2-453.1
2-453.2
BROOKS I
PT POTRERO TURN
POINT POTRERO REACH
GENERAL ANCHORAGE NO 6
110.224 (see note A)
Potrero
Richmon
Dry dock
Marine RR
Shoaling rep 1984
Foul
Poles
Pile
Log

This Page Intentionally Blank

2-454 -A Richmond Inner Harbor/Hoffman Marsh - Site Summary 2-454 -A

County: Contra Costa **GRP:** 4 **Latitude** 37 54.5 **N** **Longitude** 122 20
USGS: Richmond **OSPR Map:** 151 **Last ACP Update** 01/01/1994

SITE DESCRIPTION: **(general characterization of site - geomorphology, habitat, exposure, currents)**
This site lies near the southern boundary of the city of Richmond and is bounded on the northwest by the residential / business area east of the Richmond Marina, on the north and east by Highway 580, on the south by Central Ave and on the west by Brooks Island. These marshes are tidally influenced and support salt marsh vegetation. The Inner Harbor marshes are protected by approximately two miles of rip rap, with two openings to San Francisco Bay, each about a quarter of a mile across. There is a wide intertidal mudflat to the south of the marshes. Hoffman marsh is connected to the Bay by a narrow channel, lined with rip rap, which opens to the Bay at Point Isabel. Hoffman marsh and most of the land bayward is owned by East Bay Regional Parks (Pt. Isabel Regional Park).

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
"A" Priority all year

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
This site is an "A" priority all year. The endangered California clapper rail lives in the marshes. The marshes and adjacent mudflats are important
to shorebirds and migratory waterfowl.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
The California clapper rail and migratory waterfowl are at risk here.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
	NorCom DISPATCH	CA DEPT OF PARKS AND RECREATION	(916) 358-1300	
	Dee Tilson	East Bay Regional Park	(510) 233-8051	

2-454 - A Richmond Inner Harbor/Hoffman Marsh - Site Strategy 2-454 -A

County and Thomas Guide Location	NOAA CHART	Latitude N	Longitude W
AAA Richmond Contra Costa	Entrance to San Francisco Bay 18649	37 54.5	122 20

CONCERNS and ADVICE to RESPONDERS: Last Page Update :

Should oil enter the marsh, injury and death of vegetation and wildlife can be expected. Keep oil from entering the channels and embayments. Endangered species live in the marshes year-round and may be injured by foot traffic. Oil is also a threat to the many birds which use the open water. Avoid tramping oil into marsh and sediments. Most of the property belongs to East Bay Regional Parks.

HAZARDS and RESTRICTIONS:

Navigational hazards include shallow water, a submerged pipeline and debris. The bottom type is soft mud.

SITE STRATEGIES

Strategy 2-454.1 Objective: Exclude oil from marsh entry channels

ACP DATE: 01/01/2002

Exclude oil from two major entrances to the marshes and embayments:
a) the southerly entrance is near Central Avenue off of I-580 (Pt Isabel Regional Park) includes a long narrow channel which leads about 2000 feet back to a marsh behind the railroad grade (Hoffman Marsh) and a second opening at the bayfront between the riprap shoreline (north of that channel) to a riprap breakwater about 100 yds offshore; (Use 1000 feet of 9X9+ exclusion boom from Pt Isabel to the breakwater tip in a shallow chevron formation, and back the harbor boom with 1100 ft of small boom; also, place a small chevron of boom backed with sorbant at the mouth of the long channel.)
b) the northerly entrance is a wide gap in an east-west riprap levee at the north end of the embayment; (Exclude oil with 1100 ft 9X9+ harbor boom in a long chevron formation.)
c) there may also be small breeches in the riprap levees which are not show on maps or strategy diagrams. Deploy boom in chevron formation at such openings (no diagram shown).

Strategy 2-454.2 Objective: protection for splash-over or porous breakwater

ACP DATE: 01/31/1994

Breakwater can be topped by waves at high tide. Strategy may require boom on either side to prevent seepage through or splash over the breakwater when large concentrations of oil are present. **((X) No strategy diagram)**

Strategy 2-454.3 Objective: Protection booming

ACP DATE: 01/31/2000

If it appears that the initial response strategy will be unsuccessful, it is recommended that 5000 feet of harbor boom be deployed along the outer edge of the mud flat outside the breakwater in the northeast corner of Richmond Inner Harbor. An example of this strategy is described in "Potential Oil-Spill Protection Strategies for San Francisco Bay, California (Hayes and Montello, 1994) **(Check here means (X) " No strategy diagram")**

Table of Response Resources

strategy number	harbor boom	swamp boom	Other boom type	sorb boom	Anchoring no	type and gear	Boom boat	Skiffs punts	Skimmers No	Type	Special Equipment No	and kinds	staff deploy	Staff tend
2-454.1	2500	1100		200	8	6-8 25# danforth, 15' 1/2 chain	2	2		1		Shallow draft boom boat.	8	
2-454.2	0	0	0	0	0		0	0	0	0				
2-454.3	5000	0	0	0	11	22# danforth, 15' 1/2 chain	3	1	0	0		very shallow water boom boats	12	

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)

From Coast Guard Island, take Highway 80 north and exit at Central Avenue. Turn left and proceed to the rear of the Costco Warehouse. If necessary, small boats can be launched over the beach from Point Isabel, but the nearest marina

LAND ACCESS: Good vehicle access

WATER LOGISTICS: very shallow water

Limitations: depth, obstructions:

Launching, Loading, Docking and Services Available: Richmond Marina, and Berkeley Marina

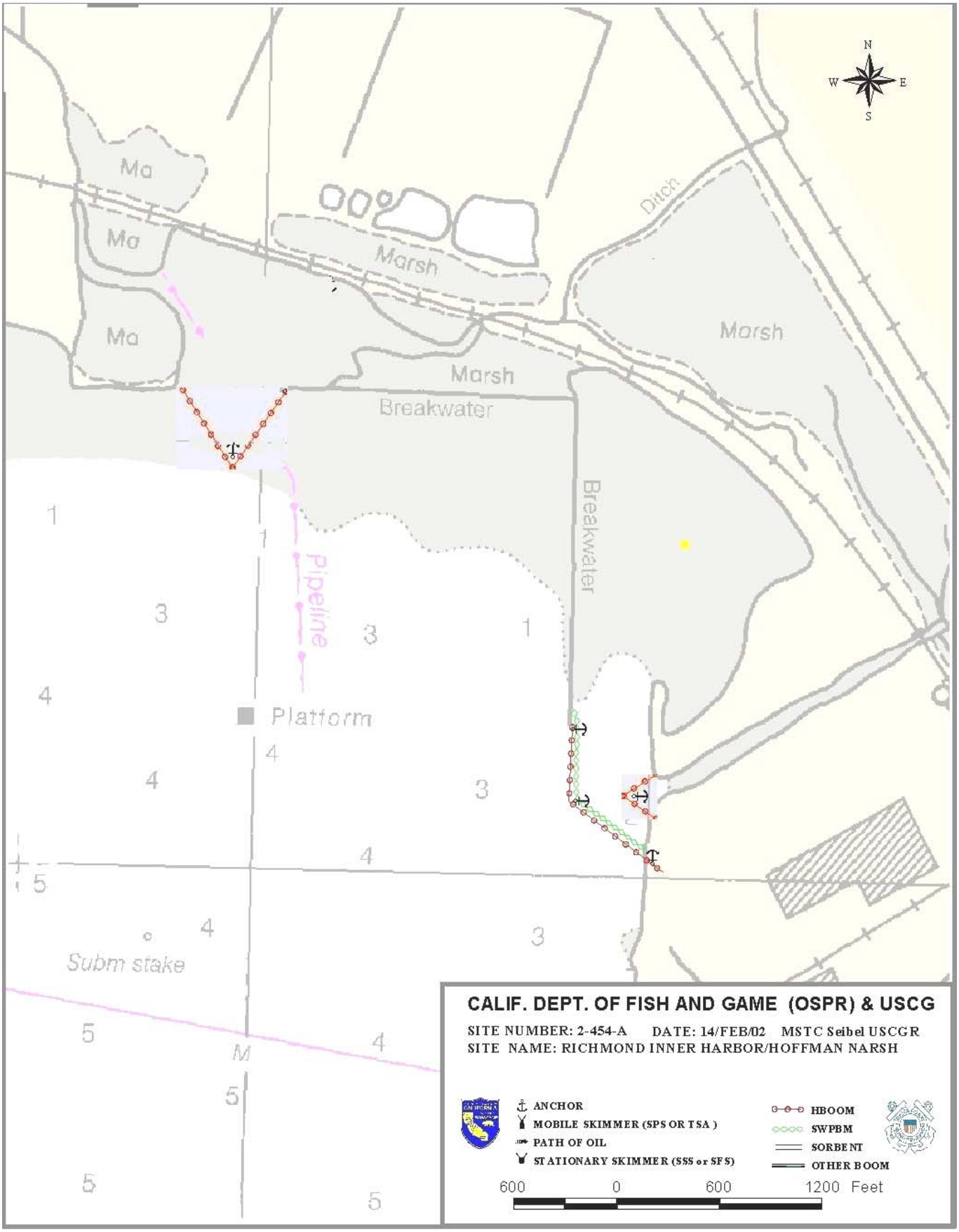
FACLITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:

Good staging and field post space at Richmond harbor and marina and MSRC Docks. Limited staging and field post opportunities at Point Isabel Regional Shoreline.

COMMUNICATIONS PROBLEMS:

ADDITIONAL OPERATIONAL COMMENTS:

2-454-A Richmond Inner Harbor/Hoffman Marsh -Strategy Diagram 2-454-A



This Page Intentionally Blank

2-455-X/D Santa Fe Channel - Site Summary 2-455-X/D

County: Contra Costa **GRP:** 4 **Latitude** 37 55' N **Longitude** 122 22'
USGS: Richmond **OSPR Map:** 151 **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
The Santa Fe Channel is the main shipping channel of Richmond Harbor. It lies south of Cutting Blvd and highway 580 between Pt. Richmond and the city of Richmond and Richmond Marina Bay. Santa Fe Channel is a shipping channel. The shorelines are of man made materials, riprap, pier pilings, and seawalls. There are small patches of mixed sand and gravel beaches and wetland vegetation. Currents are generally weak, less than 1 knot. The waters of the channel are generally protected from strong wind and seas larger than a few inches are generally absent.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
This is an industrial area with high risk of spills. It is an excellent site to collect, contain, and recover oil. Oil that escapes this area will present a greater threat to highly sensitive areas nearby.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
This is degraded habitat and has continual impacts from commercial use. Pilings, bulkheads, riprap provide structural habitat for organisms living here. Gravel and mud beachs and flats support biota which is forage for shore birds. This embayment provides habitat for fish and waterbirds.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
Birds feeding and resting in the Santa Fe Channel can be expected to be most abundant during the fall and spring.
Fish and other organisms living in the water column will be present in all seasons.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
E	Port of Richmond	(510) 215-4600		
	Dispatch EBRP	East Bay Regional Park District	(510) 792-0222	
	Andrew Galvin	Ohlone Nation	(510) 810-9701	
E L O	Tom Wilson	Port of Richmond, City of Richmond	(510) 215-4605	(510) 233-3105

2-455 - X/D Santa Fe Channel - Site Strategy

County: Contra Costa **NOAA CHART:** S Francisco Bay-Angel I - P S Pedro

Latitude 37 55' N Longitude 122 22' W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
The Santa Fe Channel is the main shipping channel of Richmond Harbor. It lies south of Cutting Blvd and highway 580 between Pt. Richmond and the city of Richmond and Richmond Marina Bay.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
This is an industrial area. Be aware of truck traffic on the roads. People working on the water, particularly those in small craft must be aware of ship traffic and the potential for objects to fall from docks. Currents are light and the water generally deep.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
This is an industrial area with high risk of spills. It is an excellent site to collect, contain, and recover oil. Oil that escapes this area will present a greater threat to highly sensitive areas nearby. While plants and animals living on rip rap, seawalls and pilings, in the water column, and birds resting on the water in Santa Fe Channel may be sensitive and vulnerable to oil, the total impact upon wildlife, and the cost of cleanup and restoration can be limited by the containment and recovery of oil in the channel.

SITE STRATEGIES

Strategy 2-455.1

(USCG Strategic Objective: **3&5**) **Dates:** **SISRS** **Approved** 02/06/1999 **last tested** **ACP date** 01/01/2000

Objective or Prevention Condition

Contain/collect oil within Channel and prevent oil from leaving the channel and threatening sensitive sites immediately outside of the channel. Divert oil to shore side skimming.

Technique Details

Contain the Channel by closing the mouth with repeated boom layers and divert to shore side skimming (SSS). Deploy 2000 feet of boom from Sheridan Point Park to Potrero Point. Collect and recover oil at Potrero Point on the ebb tide. Deploy another 2,000 feet of boom parallel to and 2,000 feet north of the first. Collect and recover oil along the west side of the channel on the ebb tide. Deploy 1000 feet of boom in a north south direction from the west side of the confluence of the Lauritzen Canal and the Santa Fe Channel to the opposite side of Santa Fe Channel. Collect oil in Lauritzen Canal on the flood tide. Oil could also be collected in the Parr-Rich Canal on the flood tide using a similar deployment, however, this site would require 2,000 feet of boom. The former dry docks immediately west of Potrero Point should be used to collect and recover oil. Collection can be enhanced by deploying a 600 foot length of boom from the southwest corner of a dry dock in a east southeast direction and anchoring it there. At least two such collection systems should be set up. Sorbent boom should be available to back up and catch any oil that might escape the collection sites.

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers -No	special equip	deploy personnel	tending personnel		SO
2-455.1	6200	10			500	5			10	10	yes	3&5

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
Take highway 580 to Richmond. To reach the Richmond Marina launch ramp, take the Harbor way exit. Turn south onto Harbor Way South. Turn left on Hall and proceed to the Richmond Marina. To reach the oil terminals on the west side of the Santa Fe Channel, take the Canal Blvd. Exit. Turn south onto Canal Blvd and proceed to the appropriate terminal.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
Good access for trucks and other heavy equipment along most shorelines

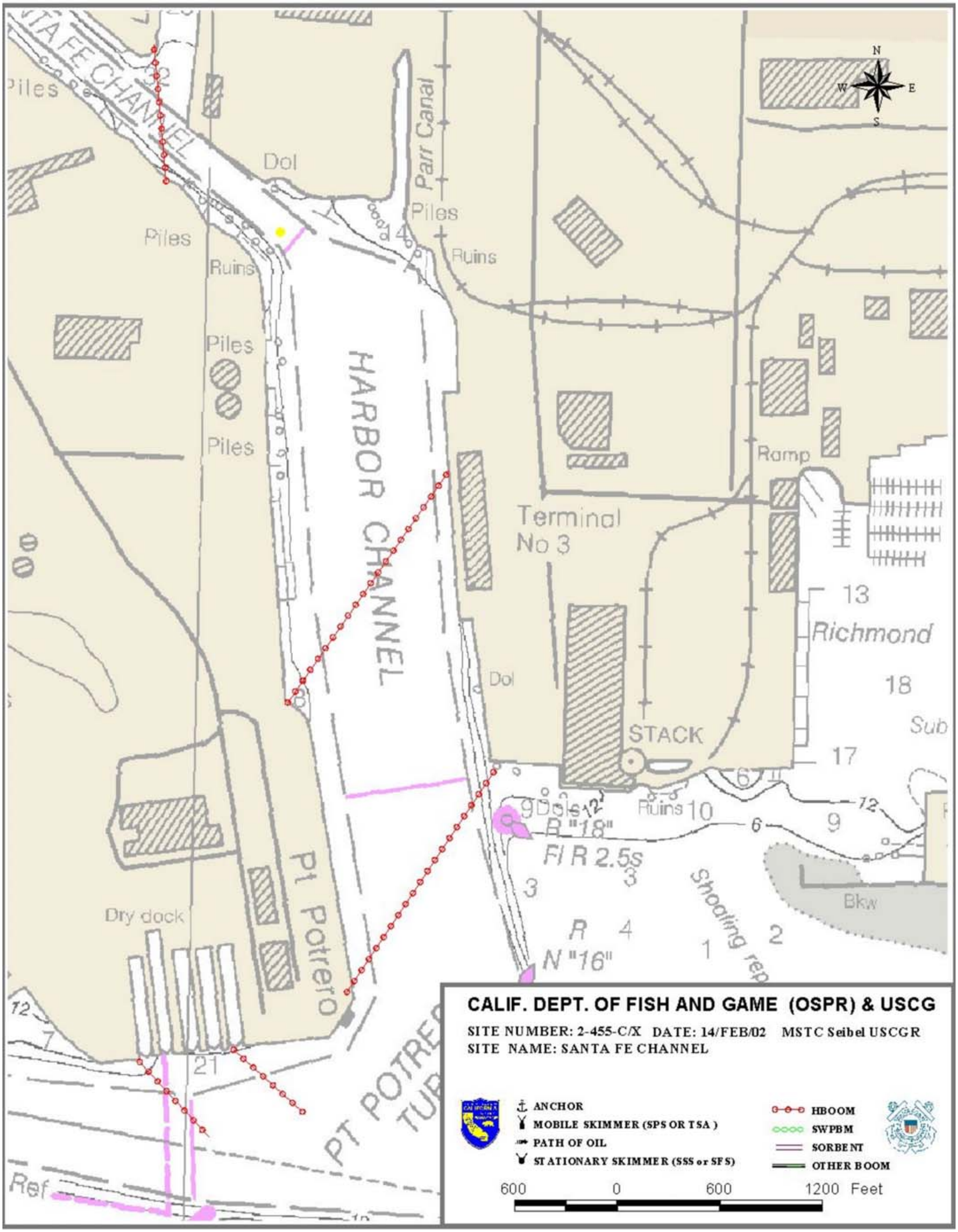
WATER LOGISTICS:

Access limitations: depth, obstructions: Good access throughout channel
Boat Launching, Loading, Docking and Services Available: Boat launching at Richmond Marina Bay

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
Potential staging areas at most oil terminals along the channel, at MSRC at the end of Canal Blvd., and at Richmond Marina Bay. Most oil terminals can set up small command posts.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


N
W
E
S
SANTA FE CHANNEL
Piles
Dol
Parr Canal
Piles
Ruins
Piles
Ruins
Piles
Piles
HARBOR CHANNEL
Ramp
Terminal
No 3
13
Richmond
18
Dol
Sub
STACK
17
9 Dols
Ruins 10
R "18"
Fl R 2.5s
3
Shooting
Bkw
Dry dock
Pt Potrero
R
N "16"
PT POTRERO
21
Ref
CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-455-C/X DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: SANTA FE CHANNEL
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
600
0
600
1200 Feet

This Page Intentionally Blank

2-456-A Albany Marsh - Site Summary 2-456-A

County: Contra Costa **GRP:** **Latitude** 37 54 **N** **Longitude** 122 19
USGS: Richmond **OSPR Map:** **Last ACP Update** 01/01/2000

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
This site includes the embayment and tributary marshes between the Pt. Isabel peninsula and the Golden Gate Fields peninsula. Both peninsula are largely fill and ripped along most of their margins. The two peninsulas roughly form a rectangle with the back marsh making the shore end. The back bay marsh is pickleweed marsh fronted with a sheltered tidal flat extending and very gradually deepening bayward and around the south side toward the mouth. Over half the bay is exposed tidal flat at low tide. There is almost no wave action at the marsh margin and very little past the mouth. The extensive tidal flats are used by shorebirds for foraging and water birds shelter in the calm of this bay. The back bay marsh is the property of the Calif. Dept. Fish and Game.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
This is an A-priority site all year due to the extensive marshes. Several Special Status Species occur here including two endangered species. These marshes and the adjacent tidal flats are heavily used my migratory shorebirds and waterfowl from September through April.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
The primary habitats of concern are the pickleweed marsh and the fronting sheltered tidal flats. Both are natural collection sites and both would be exceedingly difficult to cleanup or rehabilitate. The flats and the becalmed bay are important habitat for birds for foraging and resting particularly during the wintering period.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
The flats are feeding habitat for shore birds, and embayment is resting habitat for waterbirds (particularly during rough weather), including ducks, loons, grebes and gulls. The marsh is habitat for marsh birds including the endangered California clapper rail.
The marsh is also inhabited by the endangered saltmarsh harvest mouse.
The mudflats have an extensive infauna and a wide variety of fish forage here during high tides.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
	Joy Albertson	San Francisco Bay National Wildlife Refuge	(510) 792-0222	
	Joseph Didonato	East Bay Regional Park District	(510) 635-0135	
	Dispatch EBRP	East Bay Regional Park District	(510) 792-0222	
	Region 3 Office	Ca Dept Fish & Game	(707) 944-4400	

2-456 - A Albany Marsh - Site Strategy

2-456 - A

County: Contra Costa **NOAA CHART:** 18649/18650 Entrance to SF Bay

Latitude 37 54 N Longitude 122 19 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site

This site includes the embayment and tributary marshes between the Pt. Isabel peninsula and the Golden Gate Fields peninsula.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site

The water is reasonably deep at the mouth, but becomes progressively shallower as you proceed inward to shore. Beware of possible

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)

The back bay has extensive shallow mudflats and pickleweed marshes which have endangered species and lots of bird use. The habitat is very sensitive and almost impossible to cleanup. The plan is to keep oil from entering the mouth or to divert it to shore near the mouth for collection. Please stay off the marsh and mudflats and avoid trampling vegetation or oil into muds.

SITE STRATEGIES

Strategy 2-456.1

(USCG Strategic Objective: **5**) **Dates:** SISRS Approved 05/17/1999 last tested ACP date 01/01/2000

Objective or Prevention Condition

Exclude oil from embayment on west or southwesterly winds.

Technique Details

Deploy boom from the southerly peninsula tip to Pt. Isabel: 1500' 9X9+ Hboom. In most conditions a second layer of boom will be required to intercept and exclude oil washed over the first layer by wave actions. Deploy 1500' 4X4+ a few yards behind the first layer. Establish collection on Pt. Isabel with shallow water skimmer and vac truck: double line the collection pocket.

Strategy 2-456.2

(USCG Strategic Objective: **5**) **Dates:** SISRS Approved 05/17/1999 last tested ACP date 01/01/2000

Objective or Prevention Condition

Exclude oil from embayment on northwesterly winds by directing oil to collection.

Technique Details

Deploy boom from the southerly tip of Pt. Isabel at a diagonal to midpoint on the south shore: 2300' 9X9+ Hboom. In most conditions a second layer of boom will be required to intercept and exclude oil washed over the first layer by wave actions. Deploy 2300' 4X4+ a few yards behind the first layer. Deploying over the mudflat will help break wave and reduce washover. Establish collection on the south shore with shallow water Shore side skimming system: double line the collection pocket. Back with sorbent as necessary.

Strategy 2-456.3

(USCG Strategic Objective: **5**) **Dates:** SISRS Approved 05/17/1999 last tested ACP date 01/01/2000

Objective or Prevention Condition

Backup exclusion strategy if oil gets past exclusion deployment.

Technique Details

Repeat the deployment with a second deployment. Also, back the collection site with a length of overlap parallel to deployment. Back deployment with sorbent (1500-2300' sorbent)

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers	-No	special equip	deploy personnel	tending personnel		SO
2-456.1	1500	1500		8/22+/danforth + chain	100	2 1		1	shallow &	8	8	2	5
2-456.2	2300	2300		10/22+/danforths	3	2 1	SSS		very shallow Bboats , skimmers &	12	10 + 2 shore staff	2	5
2-456.3	2300	2300		10/22+/danforths	2300	3 2			very shallow draft vessels	12			5

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)

There is access to this area from Pt. Isabel Regional Park: From I-80 or I-580 just south of Richmond, exit on Central Ave and drive bay-ward to Pt. Isabel. (There is also access on the south shore though Golden Gate Fields at Buchannon St exit.) By water, the inlet is 2 miles north of Berkeley Marina just south of Pt. Isabel.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
access good all types except on marshy margin

WATER LOGISTICS:

Access limitations: depth, obstructions: Very shallow particularly toward back. Beware, obstructions

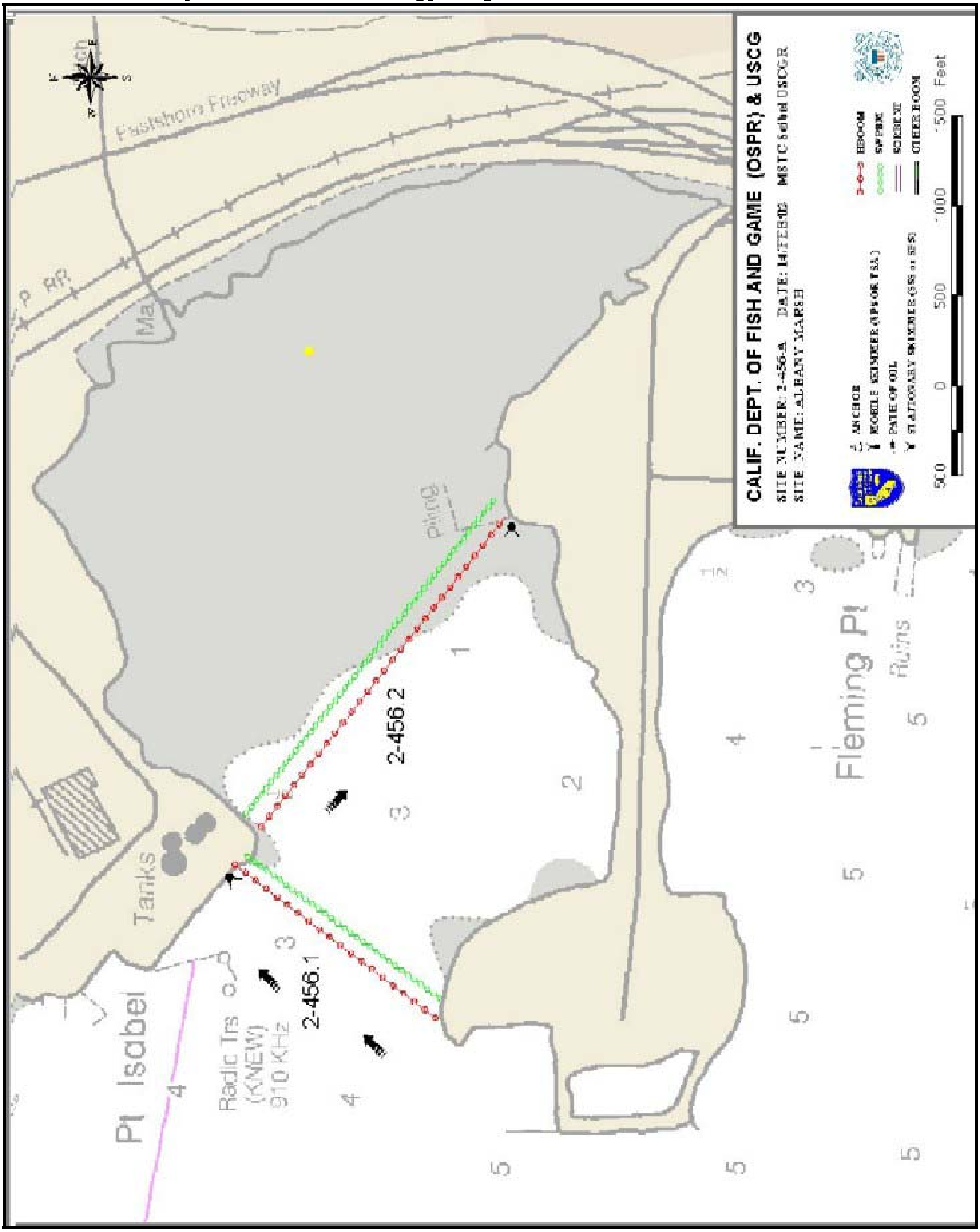
Boat Launching, Loading, Docking and Services Available: Launching, gas, and moorage at Richmond Marina and Berkeley Marina.

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:

Full facilities and staging both Richmond and Berkeley. Boom can be delivered to shoreline for deployment at Pt. Isabel or south side point.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
Eastshore Freeway
Piling
2-456.2
2-456.1
Tanks
Pt Isabel
Radio Trs
(KNEW)
910 KHz
Fleming Pt
Ruins
500 0 500 1000 1500 Feet

This Page Intentionally Blank

2-457-C/A Berkeley Eelgrass Beds - Site Summary 2-457-C/A

County: Alameda **GRP:** 4 **Latitude** 37 51 **N** **Longitude** 122 19 **W**
USGS: Oakland West **OSPR Map:** 152 **Last ACP Update** 01/01/1994

SITE DESCRIPTION: **(general characterization of site - geomorphology, habitat, exposure, currents)**
The Berkeley eelgrass beds lie in water shallower than 10 feet deep between Flemming Point and the Berkeley Pier. The eelgrass bed is centered on the shallow bar just north of the Emeryville channel and extends from the channel north about half way to the Berkeley pier. This eelgrass bed, like all eelgrass beds can vary in distribution from year to year. It is not exposed to oil most of the time, only when tides are so low that the eelgrass tops are exposed on the surface (hence the sliding sensitivity).

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
The eelgrass beds are an "A" priority whenever exposed to oil on the surface.

RESOURCES AT RISK
HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
Eelgrass beds are an important habitat for numerous species.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
Eelgrass is important cover and substrate for organisms. Although herring spawn on eelgrass, this is not a site where herring tend to prefer to spawn.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
This is a submerge site and is unlikely to have cultural sites vulnerable to oil or response activities. However, contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
	Peter Baye	U S Army Corps of Engineers	(415) 744-3322	
	Mike Josselyn	National Marine Fisheries Service, Tiburon	(415) 454-8868	
	Diane Watters	Calif Dept of Fish and Game	(650) 688-6357	

2-457 -C/A Berkeley Eelgrass Beds - Site Strategy

County: Alameda **NOAA CHART:** Entrance to San Francisco Bay 18649 Latitude 37 51 N Longitude 122 19 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site

The Berkeley eelgrass beds lie in water shallower than 10 feet deep between Flemming Point and the Berkeley Pier.

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site

Navigational hazards include shallow water, a submerged pipeline and debris. The bottom type is soft mud.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)

When eelgrass is exposed (at low tides), oil quickly attaches and clings to eelgrass strands. Once oil gets fouled with eelgrass it becomes a subsurface threat to fish and other organisms which thrive in this cover.

SITE STRATEGIES

Strategy 2-457.1

(USCG Strategic Objective: **7**) **Dates:** SISRS Approved 01/01/2002 last tested ACP date 01/01/2002

Objective or Prevention Condition

Primary / Initial action - assess for future actions: eelgrass is vulnerable primarily at very low tides when tops may become exposed.

Technique Details

Consider applying dispersants to oil in open waters before it comes into the vicinity of the eelgrass bed. Determine if tides will be low enough to expose eelgrass fronds to oil.

Strategy 2-457.2

(USCG Strategic Objective: **7**) **Dates:** SISRS Approved 01/31/1994 last tested ACP date 01/01/2002

Objective or Prevention Condition

Protective / deflective booming when oil coming from the west

Technique Details

When oil is approaching from the westerly direction, attempt to deflect it away from the eelgrass bed. Deploy deflection boom by cascading several 600 foot sections of harbor boom between the Emeryville Marina to about half way to the Berkeley pier. Overlap each section of boom. Oil will probably be wind driven. Set each section of boom at a shallow angle to the wind. Set each section as straight and taught as possible so that oil does not collect anywhere on the boom, but moves continuously along the boom until it falls off the end and is caught by the next section of boom. There is very little current in this area.

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers	-No	special equip	deploy personnel	tending personnel		SO
2-457.1	5000			20 /20# w/ 10' 1" chain	2000	10	2			20	20	yes	7

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)

From Coast Guard Island take Hwy 880 north to Hwy 80 north. Exit at Powell Avenue and proceed west. Make a right on Frontage Road and proceed north to the Berkeley Yacht Harbor.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)

none

WATER LOGISTICS:

Access limitations: depth, obstructions: waters are good except in shallows of the eelgrass bed

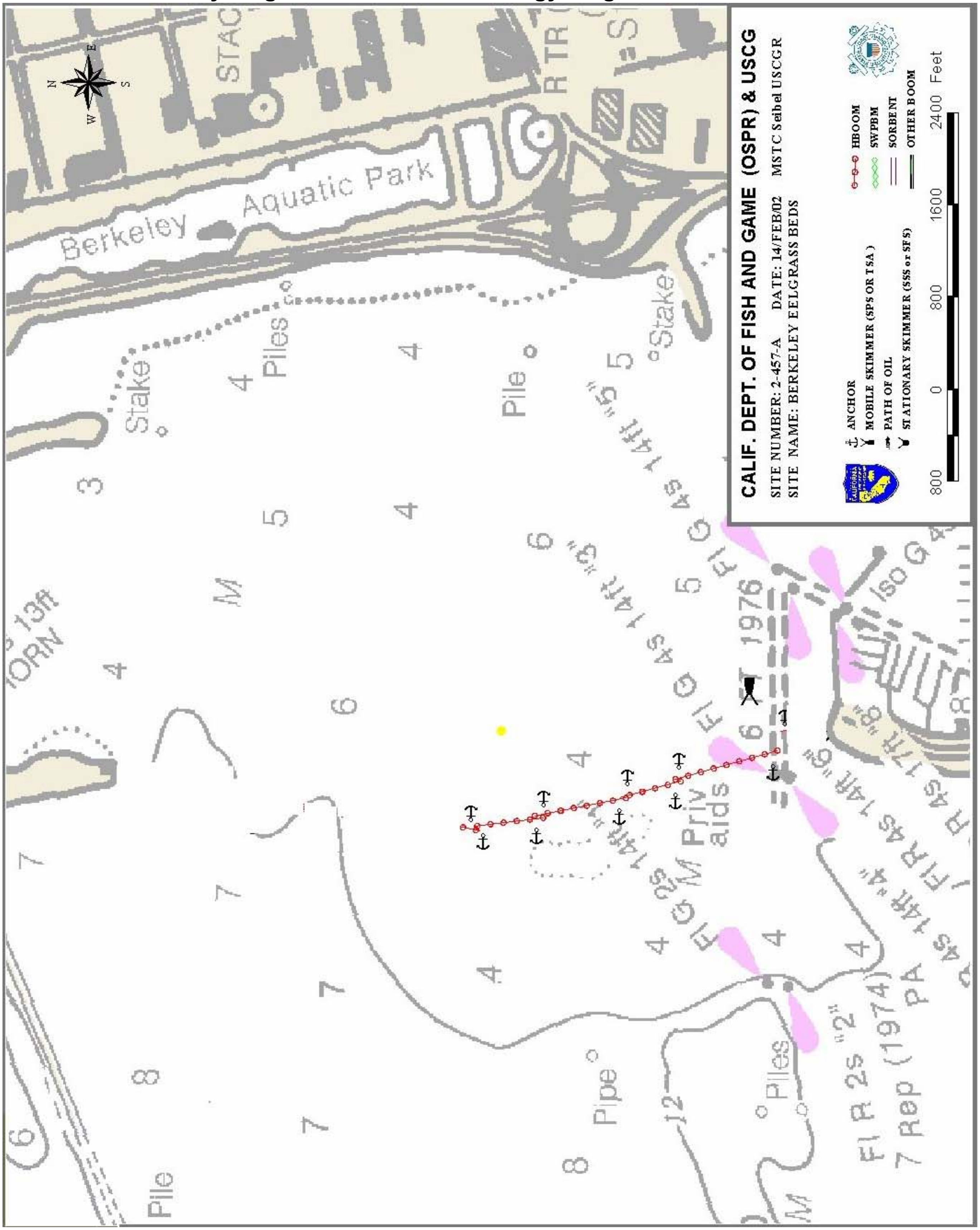
Boat Launching, Loading, Docking and Services Available: Emeryville marina is an excellent staging and launching site. Berkeley is similarly well situated. Both have fuel.

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:

Both Berkeley and Emeryville have excellent services and facilities for staging. Emeryville may have slightly better opportunities for

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-457-A DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: BERKELEY EELGRASS BEDS
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
800 0 800 1600 2400 Feet
Berkeley Aquatic Park
Stake
Piles
Pile
Pipe
Priv aids

This Page Intentionally Blank

2-458-A Emeryville Lagoon/Mudflats - Site Summary 2-458 - A

County: Alameda **GRP:** 4 **Latitude** 37 50 **N** **Longitude** 122 29
USGS: 7.5" Quad: San Quentin **OSPR Map:** 152 **Last ACP Update** 01/01/1997

SITE DESCRIPTION: (general characterization of site - geomorphology, habitat, exposure, currents)
The site is the embayment just north of the Oakland Bay Bridge Toll plaza and includes the waters and marsh easterly from the radio towers (south) to the opposite breakwater tip (north) at Emeryville.. This west facing bay transitions from open water to shallows and mudflats to a southerly and easterly pickleweed marsh perimeter. The northerly margin is ripped fill. A tidal channel drains to the lagoon at the easterly tip from the adjacent urban area east of I-80.

SEASONAL and SPECIAL RESOURCE CONCERNS (seasonal issues, special status spp present, water intakes)
Sensitive species occur here. The marshes are an "A" priority year around. Site is heightened during winter months when it is heavily used by migratory birds.

RESOURCES AT RISK

HABITATS AT RISK: (biological habitats including time of year when most sensitive and vulnerable)
This habitat is ecologically rich and sensitive. An extensive pickleweed saltmarsh extends along the east and southern margin and is fronted with extensive mudflats; open water is heavily used by ducks and sea birds year around and particularly in the winter.

SPECIES/COMMUNITIES AT RISK (Brief summaries including time of year when most sensitive/vulnerable)
The marshes are habitat for endangered California clapper rail. The marsh and exposed mudflats are used heavily by shorebirds and wading birds. Waterfowl and seabirds use the area and large rafts of ducks congregate here in winter months.
The pickleweed marsh probably supports the endangered saltmarsh harvest mouse.
The rare plant, north coast bird's beak, Cordylanthus maritimus ssp. Palustris, has been identified from this site.

CULTURAL and ARCHEOLOGICAL SENSITIVITIES
Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880)) for specific information on historic or cultural resources in this area.

KEY SITE CONTACTS - type: E-ntry/access; B-iological expertise; L-ogistical; C-ultural; T-rustee; or O-ther assistance

Type	Name	Organization	Phone	FAX
B	Dr Peter Baye	USFWS Ecological Services	(707) 562-3003	
TB	Mike Josselyn	National Marine Fisheries Service, Tiburon	(415) 454-8868	

2-458-A Emeryville Lagoon/Mudflats - Site Strategy 2-458-A

Latitude Longitude

County: Alameda **NOAA CHART:** 18649/18650 Entrance to SF Bay 37 50 N 122 29 W

SITE LOCATION: boundaries, landmarks, area to locate and delimit the site
The site is the embayment just north of the Oakland Bay Bridge Toll plaza and includes the waters and marsh easterly from the radio towers (south) to the opposite breakwater tip (north) at Emeryville..

HAZARDS and RESTRICTIONS - Air, Water & Ground - things to beware of when approaching or at site
Very shallow water at the southern and eastern margins. Possible submerged obstructions inside the bay- mid to east end. Air traffic beware of radio towers.

CONCERNS/ ADVICE to RESPONDERS: (regarding sensitive species present, penetration into marshes or sediments, burial, organism burrows, tidal channel spreading, watertable limitations, collateral impacts)
The prime concern is to exclude oil from entering this bay and impacting birds and marshy margins. Cleanup of the marshy margins would be extremely difficult or prohibitive, and natural resource injuries would be very extensive. Responders should stay out of marshes and mudflats unless specifically directed though the IC/UC: activity should be confined to the mouth of the lagoon.

SITE STRATEGIES

Strategy 2-458.1

(USCG Strategic Objective: **5**) **Dates:** SISRS 01/31/1994 Approved last tested 07/01/1996 ACP date

Objective or Prevention Condition

Exclude/Deflect oil past the site and exclude it from entering lagoon by winds, waves and very light tidal current

Technique Details

Set cascading boom across the mouth according to the prevailing winds (diagram shows deployment for typical NW winds - adjust if other wind/wave conditions prevail). Deploy 4500' 8X8+ Hboom in 600-1200' lengths at an angle to the prevailing winds and waves. Divert oil to sandy beach west of radio towers on W to NW winds or to Emeryville spit on S to SW winds, for shore recovery with shore-based skimmers. Link boom ends with sorbent to insure against oil eddying around boom. If oil is threatening to overwhelm the strategy, deploy SPS or Towed Skimming Arrays behind the boom to intercept oil as needed.

Strategy 2-458.2

(USCG Strategic Objective: **5**) **Dates:** SISRS 01/31/1994 Approved last tested 07/01/1996 ACP date

Objective or Prevention Condition

Exclusion backup if oil will over-top the boom

Technique Details

Deploy a continuous line of harbor boom (3600' 8X8+ Hboom) across the bay close behind the cascade, from the radio towers north to the Emeryville riprap.

Table of Response Resources

strategy	hboo	swpbm	xboom	Anchoring	sorb	Bb/skif	skimmers	-No	special equip	deploy personnel	tending personnel		SO
2-458.1	4500			28/22+/danforth + 15' chain	2000	3	3	1 SSS	Bboat: 1 very shallow draft	15	15	including land 2	5
2-458.2	3600			7/22+/danforths + chain		3	2		Bboat: very shallow draft at south	11	11	above	5

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)
The site is the embayment just north of the Oakland Bay Bridge Toll plaza. The South side is accessible from the I-80 exist just before the toll plaza. Powell Street (exist from I-80 at Emeryville) borders the north margin. By boat, the nearest launch facility is at the Emeryville Marina at the end of Powell Street.

LAND ACCESS LEVEL: (foot only, 2WD, large truck, 4WD, road limitations...seasonally impassible ...locked gates)
All vehicles, all seasons on north and south access

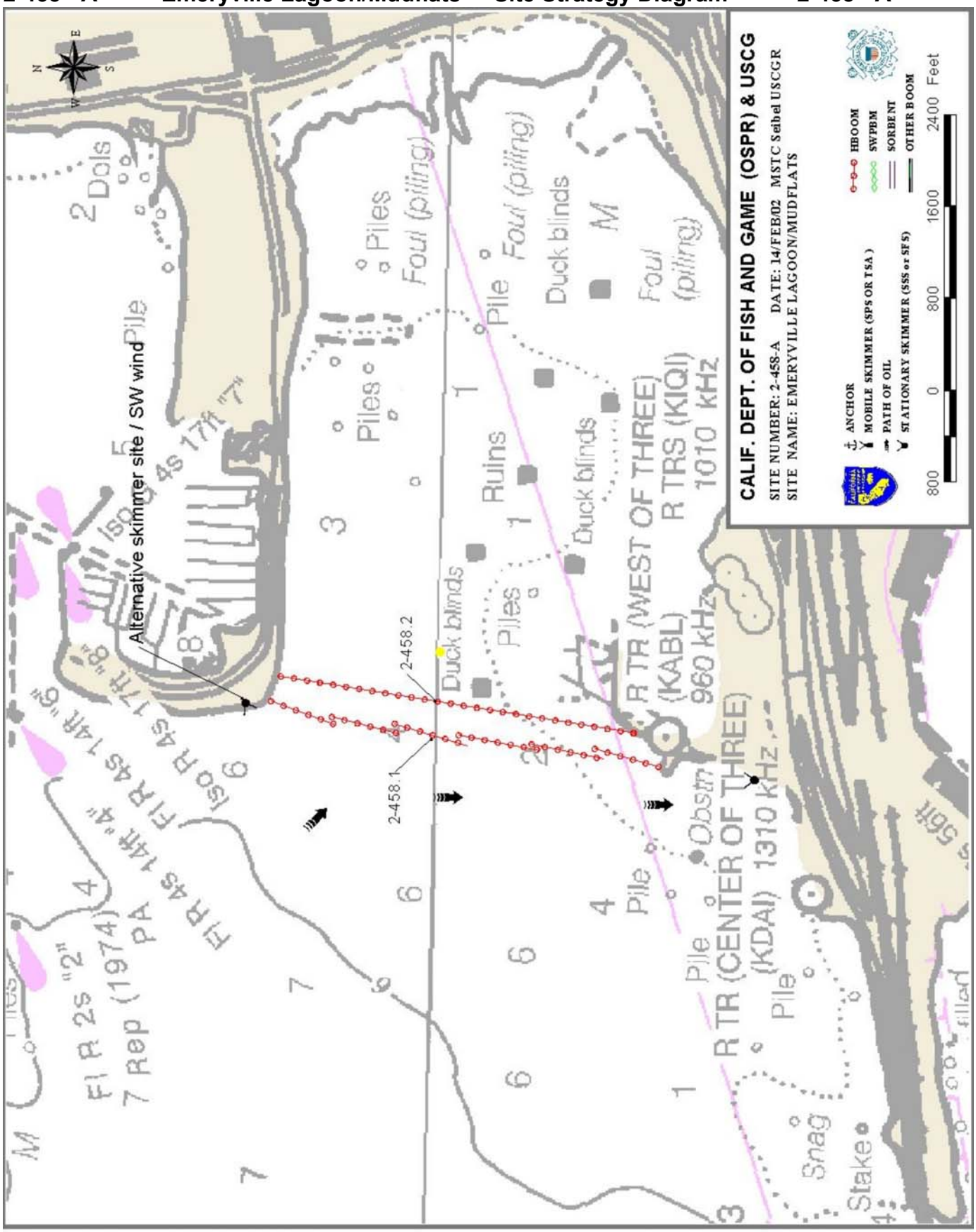
WATER LOGISTICS:

Access limitations: depth, obstructions:	Very shallow on south half occasional obstruction thru out.
Boat Launching, Loading, Docking and Services Available:	The nearest lunch, gas, moorage and service is located at the Emeryville marina on the north side of Emeryville spit.

FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:
Stage at Emeryville Marina. Good service availability and security capability. Boom could be deployed directly from land to water from this local. Emeryville PD and Fire are nearby. Berkeley Marina is 3 miles to the north and provides similar capabilities.

COMMUNICATIONS LIMITATIONS / PROBLEMS: No Problems Radio Pager Cell phone

ADDITIONAL COMMENTS


CALIF. DEPT. OF FISH AND GAME (OSPR) & USCG
SITE NUMBER: 2-458-A DATE: 14/FEB/02 MSTC Seibel USCGR
SITE NAME: EMERYVILLE LAGOON/MUDFLATS
ANCHOR
MOBILE SKIMMER (SPS OR TSA)
PATH OF OIL
STATIONARY SKIMMER (SSS or SFS)
HBOOM
SWPBM
SORBENT
OTHER BOOM
800 0 800 1600 2400 Feet
Alternative skimmer site / SW wind
2-458.1
2-458.2
Duck blinds
Piles
Foul (piling)
Ruins
Pile
Obstn
Snag
Stake
R TR (WEST OF THREE) (KABL) 960 kHz
R TR (CENTER OF THREE) (KDAI) 1310 kHz
R TRS (KIQI) 1010 kHz
Fl R 2s "2"
7 Rep (1974)
Fl R 4s 14ft "4"
Iso R 4s 17ft "6"
Iso 4s 17ft "7"
Fl R 4s 17ft "8"

This Page is Intentionally Blank